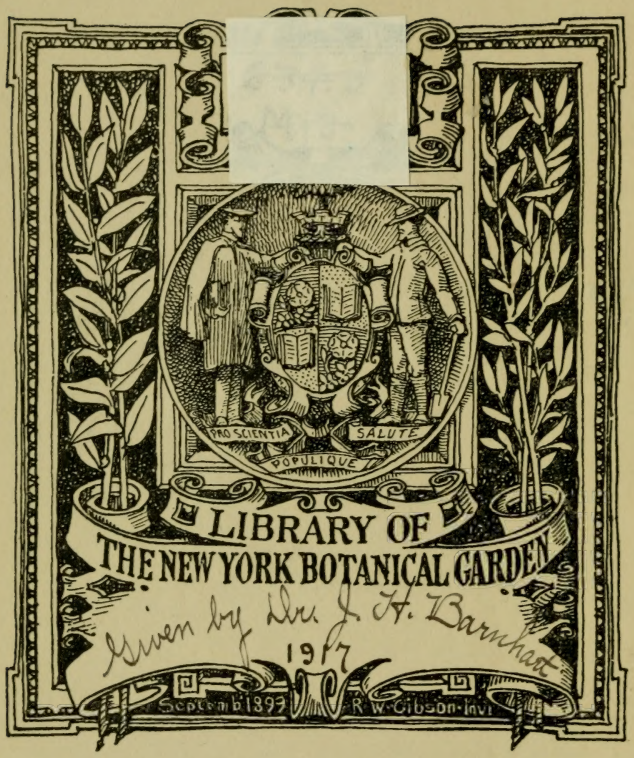
VINES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THE MAGIC OF A VINE

Under the spell of a vine, bare walls are beautified, hard outlines are softened, landscapes are made framed vistas, the mere house is made a *home*

VINES

AND HOW TO GROW THEM

A Manual of Climbing Plants for Flower, Foliage and Fruit Effects, Both Ornamental and Useful, Including Those Shrubs and Similar Forms That May be Used as Vines.

BY

WILLIAM C. McCOLLOM

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VINES
AND HOW TO GROW THEM

VINES

CHAPTER I

Uses and Habits of Vines

Ability to cover screens — Good taste in planting — Use on lawn — A "rangle-tangle" — Covering dead trees — For the pergola — In the rock garden — Covering lamp posts — Back-stops for tennis courts — Covering buildings and stone work of all descriptions — Various means of climbing.

The chief value of vines lies in their ability quickly to cover trellises and supports — an important factor in shutting from view unsightly objects such as outbuildings, rubbish heaps, laundry yards, and other necessary evils around a home. They are also the sole means of covering buildings and such objects. In fact, there is no class of plants which has so wide a variety of uses, and which offers such an opportunity for any one with a little taste to carry out schemes of his own devising. It is these little oddities that go a long way toward heightening the attractiveness of the home grounds.

As I look over some of the fine country places, I cannot but think how neglected are the vines. These estates usually have lovely, rolling lawns, beautiful shrubbery borders, and many other prominent features; but the only point where you will find any vines is on the side of a building or on the pergola, if, perchance, there is one. How it would relieve these long stretches of lawn to see a rock jutting up somewhere, with a vine or two clambering over it; or even the stump of a tree, with some vines planted around it!

Why allow these long, almost endless shrubbery borders to have nothing in them but trees and shrubs? Pick out a corner somewhere and turn it into a "rangle-tangle." To make this take two or three dozen ordinary bean poles and put them in the ground about two feet apart. They should not be equidistant, however, nor should the poles be all of the same height. Make the arrangement appear rough, plant some vines at the base of the poles, and in the course of a couple of years you cannot but be pleased with the result.

Another place where vines can be used to great advantage is in the event of a tree dying in a very conspicuous place. Do not chop it down, but remove some of the soil at the base of the tree,

replace it with fresh loam, and plant a few vines. The vines produce a very pretty and interesting effect growing in this manner.

If you have lights of any description on your place do not have the bare posts, but plant a few vines at the base of each. Great improvement will result. Similarly, the unsightly poultry-wire back-stops of the tennis courts can be wonderfully improved by a vine or two planted against them.

A very odd and pretty effect may be had by planting a vine alongside of a shrub. In a short time the vine will entirely envelop the shrub and the effect be very pleasing.

HABITS

Several different methods are employed by vines in their ambition to climb: by special organs, by twining the stem around any object within reach, and by means of long, straggling shoots which will clamber over stones and such objects without much difficulty.

Those that climb by special organs may be separated into four divisions—according to the different types of organs specially devised for this purpose — *i. e.* rootlets, tendrils, petioles or leafstalks, and leaves. Of course, there is not

much distinction between the last two groups, but there is a perceptible difference in movement and habit.

The most noticeable thing about vines that climb by means of rootlets is the fact that, of all the vine family, they are the only plants that grow straight up and down; the others have an inclination to twine or turn. It is wonderful the power these small rootlets have. Try to remove one of these vines from an object where it is established and you will find that the outer bark will tear from the rootlet before the latter will leave the object on which it is fastened. The English ivy is a good example of the rootlet climber.

The majority of the vine family is supplied with tendrils of some description. These tendrils are small, wiry stems which grow out from the shoot of the vine and grasp any object within reach. In some cases these tendrils are curled like a corkscrew; only they will be twisted half one way and half in the reverse direction. This is a great protection to the plant in the event of heavy winds and storms which would tend to break them down if there was not something to relieve the strain. A springy tendril gives and takes like a piece of elastic and thus lessens the

strain on the vine. The gourd family (*Cucurbitaceæ*), is illustrative of plants whose tendrils twist spirally.

It is wonderful the way nature takes care of her own; how she has endowed them with the means of caring for themselves. Nearly all plants have something about them which on first appearance seems of little consequence, but for which, on better acquaintance, we can readily understand the necessity. This is more noticeable in climbing plants than in any other class of nature's work. An instance of this is found in every vine that has tendrils. The young tendril invariably turns away from the light, thus, of course, coming into contact with any object it is growing on. Another illustration: have you ever noticed on a grape vine that a tendril will always come on the branch directly above the bunch? This, of course, relieves the strain on the shoot, which otherwise might break with the weight of the fruit.

There are also some climbing plants that have both tendrils and disks. These disks are soft little cushions that grow on the tips of the tendrils and emit a liquid, which, when removed from the disk, remains semi-liquid for months, but if left on the disks will soon harden and fasten them to

the object supporting the vines. The Boston ivy (*Ampelopsis Veitchii*) is a good example of these disk-bearing tendril plants. It is likewise the only one of the type that starts to develop its disks before coming in contact with its support.

The vines that climb by means of petioles, or leafstalks, are rather limited in number. They are interesting as showing how sensitive the natural organs are. If a small twig is placed so that it comes in contact with a petiole, the latter will start to swell almost immediately, and in a couple of days will have secured a firm grasp on the twig. Charles Darwin, in his experiments with climbing plants, claims to have made one of these petioles grasp a cotton string and entirely encircle it in forty-eight hours. Such sensitiveness is extraordinary when it is considered what a very slight irritation a cotton string would create. The clematis family belongs to the petiole type.

The leaf climbers are also a very small family. Their habit of climbing is very simple. The leaf, in coming in contact with anything to excite the irritableness of the organ, will curl like a hook and then the midrib will harden and hold the plant fast. Most of the plants of this class are of little commercial value and my only reason for mention-

ing them is to show all the different modes of climbing.

One of the most interesting points about the twining vines, which, as already stated, are in the great majority, is the fact that they vary as to the direction in which they twist. Start one of these twiners on something where it may easily be observed, a bamboo cane for instance, and it will always wind itself around the support in the same definite direction. The hop vine will start twining with the sun, as the hands of a watch travel. Though this would seem the more natural, the majority of twining vines twine in the opposite direction, from left to right. The common morning glory is one of them, the bean another.

Another curious thing about these twining plants is that if one of them be allowed to grow above its support, naturally it will fall over in a sort of horizontal position, and then this part of the plant will revolve in its natural direction searching for something on which to climb. If you take a string and fasten it to anything, and then wind it around in one direction, it will twist and, in time, will curl up. Not so with twining vines; instead of the entire plant moving with one motion, there seems to be a separate motion in

each section of the plant. The rapidity with which these plants travel is also wonderful. They have been known to revolve in their natural direction moving at the rate of thirty inches or more per hour.

Some may remark that this revolving movement, while interesting and curious, does not have any real effect on the ultimate growth of the vine. I am inclined to think differently. Vines of the twining habit have a tendency to twist or turn in a natural, hereditary direction, and while this turning is not as noticeable in large, hardy vines as it is in small, soft-growing vines which are usually started from seed, still it exists, and, furthermore, we will be more successful in the growing of vines if we notice these characteristics and govern ourselves accordingly. Start the vine in its natural direction and try to give it conditions so that it can hold its course, and it will certainly grow better than one treated otherwise. We can tamper with nature to a limited extent only, and we cannot hope to have the best results if we do not try to please her in some of her whims. If you wish to see how stubborn nature can be, just try to make one of the vines previously mentioned twist in the direction opposite to its natural one.

There is also a class of twiners, which, on account of their rank growth, are capable of climbing most anything, and they are very interesting to watch. If you plant a Japan honeysuckle (*Lonicera Japonica*), a good specimen of twining vine, at the base of a tree and give it no assistance, it will probably never make its way up into the branches; on the other hand, plant a bittersweet (*Celastrus scandens*), and you will find that it will soon get up into the tree. If you want to see how wonderful nature is, just watch such a vigorously growing twiner climb. I have seen a leading shoot grow up straight as an arrow some ten or twelve feet and catch the limb of a tree. Although, when growing straight up, the shoot showed no inclination to twine, it did so immediately after coming in contact with the limb. The wind, in shaking the limb, tore the vine loose several times, and still it persisted until it secured a good hold; and then half a dozen young shoots could be discerned making their way up the shoot, which was fast at the top, and eventually the entire plant established itself on its new-found friend.

Another interesting point about twining vines: have you ever noticed four or five shoots twist themselves into a sort of rope and ascend in this

manner, and as soon as they reach some object above them, start to grow out individually in different directions?

Although the plants that clamber along by means of their long, straggling shoots have no real climbing organs, man has made them climb to such an extent that they are generally classed as vines. The climbing roses, which belong to this class, are aided by the fact that their briars are invariably hooked downward. These plants, on account of their long, weak growth, can easily be trained to a trellis or other support, or, if let run wild over a rough stone wall or something where they can make headway with their long, wiry shoots, they will look quite well.

CHAPTER II

When and How to Plant

Time to plant — Spring vs. fall — Depth to plant — Distance apart to plant — Transplanting — Holding vines over in pots — Arrangement of colours — Time of flowering — Location.

The same seasonal practices can be followed in planting vines, as with other stock of a like nature, namely, spring and fall methods, although evergreen vines can be handled with safety at any time except when in active growth.

For deciduous vines, I prefer spring planting for this reason: if you plant in fall and stake the plant out against a wall or like object, it is very much exposed to the rough winter elements, and there is danger of losing it. If necessary to plant in fall do not train the vine until the following spring. Tie all the shoots together and let them lie on the ground, or still better, cover them with five or six inches of earth.

Most vines should be planted a trifle deeper than they were in the nursery, as this induces

them to throw up from the roots suckers which are usually more promising than the wood the plants have when you get them. The only exception to this rule of deep planting is in the case of grafted stock; if this is planted deep, the roots will throw up these suckers, which will monopolize all the vitality at the expense of the rest of the plant. The stock is invariably a stronger grower than the graft, hence the principle and desirability of grafting. In case these suckers do grow from the stock on grafted plants, do not fail to remove them at once; but before doing so, make sure that the plant *is* grafted.

In planting vines against anything, try to get the roots as close to the object as possible. It looks better and is more practical than if they are set a foot or so out. As the plants get older, they will sag if planted out from the trellis, and heavy snows are likely to pull the vine down from the object on which it is growing.

Before you plant vines, find out how large they are going to grow and be sure and allow them room to develop properly. Do not think that the thicker you plant them at the base the quicker they will reach the top, because the opposite is the case. Avoid, if possible, planting a heavy, rank grower next to a vine of slow growth,

as the stronger will soon overgrow and entirely exterminate the weaker.

Vines can be transplanted the same as trees or shrubs. The first operation is to get the roots all dug up and clear. Then unfasten the vine at the top and tie the shoots together, when you can readily shift it to its new quarters. In the case of moving a vine which has been growing on a trellis, it sometimes will be necessary to move the trellis along with the plant.

Should it be desired to cover with vines a building in course of construction, and which will not be finished until the planting season is past, get the vines at the proper time and put them in pots, keeping them tied to stakes; they can then be planted out at any time. You will gain a season by this means and that is certainly worth the extra work and trouble.

In planting a variety of flowering vines try to arrange the colours nicely. Don't bring two radically different coloured vines together; try to have the colours drift into one another as nearly as possible. This suggestion is especially applicable to climbing roses, as you can get a rather unsightly mixture of colours with individuals of that class of vine.

Another point that must not be overlooked

in planting flowering vines is the time of flowering. If the house is only occupied for a few months in summer, select vines which flower during that period. Of course, foliage vines are good at all times, and if the house is occupied the entire year, use a quantity of foliage vines, especially evergreens, and also some vines which bear ornamental fruit.

Location is another important factor in the planting of vines. It must be remembered that most vines are of a shade-loving nature and are at their best when partially shaded. It is not hard to find the reason of this, as most of our vines belong to the undergrowth found in the forests, and, of course, are shade lovers. There are some exceptions, as for instance the climbing roses, which are at their best with a full southern exposure. Then there are a number of vines which grow well in the sunlight, but which develop better in the shade; *e. g.,* the Boston ivy (*Ampelopsis tricuspidata*, or *Veitchii*). Notice this plant in a northern and a southern exposure, and see the grand colours you have in autumn with the northern exposure; while with the southern exposure the foliage changes but very slightly.

Another way to test the truth of this statement is to plant a vine on a sort of dividing line

Clematis and some others hold on with their petioles

English ivy and other close clingers have rootlets

HOW VINES CLIMB—I

The commonest way is by tendrils, as in teh grape. These are very strong and yet elastic

Vines twine either clockwise like the hop (right) or counter clockwise, as the morning-glory (left)

HOW VINES CLIMB—II

between light and shade and mark which way it will grow. It will invariably turn away from the light. So we must be careful of location and select vines that are most suitable for the spot where we desire to plant them. If the place is damp and shady, don't try to grow a climbing rose; or, if dry and sunny, don't attempt to grow the English ivy (*Hedera Helix*).

If you desire to cover a tall building, select a vine that is fully capable of covering it. Or, if the building is small, use a low-growing vine. Study what you want, what is best adapted for the situation, then plant it with care, and the most important factors in vine culture will have been accomplished.

CHAPTER III

Soil and Cultivation

Soil — Manure vs. fertilizer — Necessity of trenching — Building up run-down arbours — Mulching — Cultivation of the soil — When and how to water.

Soil is a question of utmost importance in the growing of vines; most of the vine family are rank growers and demand a liberal quantity of plant food. If you give them what they require, you are almost sure to have good results. If you plant them in poor soil, without any preparation, do not look for anything but failure. I should estimate that ninety per cent. of the disease and trouble we encounter in growing vines arises from improper preparation of the soil, or none at all.

For vines of all kinds, I prefer manure to commercial fertilizers. It is more lasting, it collects and stores so much moisture that it encourages root action, and, finally, there is very little danger of giving the plants too much and thereby injuring them. For very heavy soils it may be

advisable to cut down on the manure and use some fertilizer, but, all things considered, manure is far ahead of any fertilizer we have to date. The best way to apply the manure, so that the plants will get the most benefit from it, is by trenching or subsoiling. That is, by making the top and bottom soil change places — a very simple operation if you get started right.

For a pergola or arbour, mark off a bed six feet out from the posts. Go to the end of this bed and measure off four feet, remove the soil to the depth of three feet, then put about six inches of manure in the bottom of the trench. Mark off four feet again from the edge of the trench, throw about one foot of top soil into the bottom of the previously made trench, then about six inches of manure, and another layer of soil, repeating until you have made three layers of soil, when the trench is finished. For real heavy soils I would recommend placing a little drainage in the bottom of the trench — some old bricks, clam shells, or anything that will not retain water. This may seem a lot of expense to go to, but I am sure that any one who tries it will never regret it. The best cheap substitute is a good deep ploughing, turning under a liberal quantity of manure, and having a subsoil plow follow in

the rows to loosen up the bottom as much as possible. Vines, more than other plants, require this deep trenching because their roots, instead of growing out horizontally, as those of many trees do, have a tendency to grow downward.

I once had occasion to transplant a wistaria which had been growing in the same place for some fifteen years. When I dug down around the roots I found one big root running straight down. I dug down about six feet and was then obliged to cut it, as the end was not yet in sight.

In planting a vine at the base of a tree or some place where only a single specimen is required, make a good, deep hole, the same as you would for a tree, and put some manure in the bottom. Make it a miniature trench and you will accomplish in two seasons what it would take ten to achieve after merely sticking the plants in the ground.

For old, run-down arbours, or where vines on a building are beginning to deteriorate, go out a safe distance from the plants and trench the soil as you would for a new planting; or, instead of letting the vines run down, give them a semi-annual application of some good fertilizer. Mulching is very beneficial to the plants, and, where possible, is certainly a good practice.

Put on a good mulch of manure in the fall, and the winter rains will wash a great deal of the nourishing qualities into the soil. In spring the manure can be turned under. This, too, will prevent your vines from getting run down too quickly.

Cultivate the soil deeply and as often as possible, if you desire your vines to grow well. This is very important; it should be done, at least, after every rain, although, of course, the oftener the better. Vines are deep rooters, therefore deep cultivation is preferable. Loosen up the top soil well with a digging fork, using a little care; do not go too close to the stem of the plants, as there you may find a few surface roots.

Water is a very important factor in the growing of vines, and the first question that arises is, when is the proper time to apply water? In good, rainy seasons, it probably will not be necessary to apply any, but we all know that nine out of ten seasons, plants suffer a great deal from drought in this country.

The common error made in the watering of vines is simply this: the vines receive no water until they are ready to flower. When the flower spike appears, the hose is hauled out of the cellar and watering started. Plants that flower but

once a year require water when in growth, as they are then producing the wood. They require less water when in flower than at any time during the year. For example, a spring-flowering vine will require plenty of water immediately after the flowers have gone, when growth commences, while a fall-flowering vine will require water as soon as growth starts in the spring. Thus the important watering periods are spring and early summer, and, if the weather is dry during May, June, and July, get out the hose and give the plants a thorough drenching occasionally. Do not merely give the ground a sprinkling, but let the hose run on the border for a whole day; then it will not be necessary to repeat the operation so often. The lighter the soil the oftener it must be watered. If the soil is properly watered, you should be able to ram a rake handle well down into the border at any time.

CHAPTER IV

Supports and Trellises

Adaptability of trellises — Use of trellises — Poultry wire supports—Home-made supports — Strings and wire as supports — Building a slat trellis — Fancy, ready-made trellises.

A great deal of the success in growing vines depends upon the kind of trellis used. Some kinds of trellises and supports are well adapted for certain vines, while for others they would be practically useless. As an illustration — a climbing rose should have a trellis with a very large mesh, but a clematis would do much better on a smaller mesh.

The mistake is often made of spending five dollars for the trellis, twenty-five cents for the vine, and nothing for manure. This should be just reversed; the trellis should be the most inexpensive part of the outfit and also the most inconspicuous.

It must be remembered that the purpose of the trellis, or support, is merely to hold the plant in the position in which we desire it to grow.

We all know that vines would look a great deal better if they would grow as we wanted them to without the use of such support; so we must conclude that trellises are necessary in most cases, but not to the extent that they are used.

There are several kinds of supports used when growing vines of other than the rootlet type (which does not require any) against a building; but their great drawback is that it is quite difficult to get them down and back again so that they look natural, in case the building is one that requires occasional painting.

I have run across only one real solution of this problem, but that one, to my mind, satisfied every requirement. A frame was made of one-inch galvanized iron pipe and covered with ordinary poultry netting. The whole thing was then hung by the upper pipe to several stout hooks driven into the wall; the lower edge was supported on another row of hooks in the same way. Even after the vines had completely covered the screen, if it became necessary to paint the house, the whole frame could be taken down off the hooks and laid on the ground, and, if desired, protected. This method, it seems to me, would be especially useful in training vines to

shade a covered piazza, where the edge of the roof would furnish a good support for the frame. The size of the space covered would be limited only by the dimensions of a trellis that could be conveniently handled. I can conceive of a frame made in sections, each about ten feet square. This would permit of each unit being made of five ten-foot pieces of piping (one to reinforce the middle of the frame), and covered by two widths of five-foot chicken wire.

The most common method of supporting vines on buildings is that of stretching poultry wire where you desire the vines to grow. The vines will grow in and out through the meshes of the wire and thus support themselves. Get the finest wire you can and let the plant you are going to grow govern the size of the mesh. The worst mistake is to get the mesh too small, because, as the vine grows, the main stem, of course, expands and there is danger of cutting it if the mesh of the wire is too small. The idea of the small, fine wire is for appearance. Fine wire is plenty strong enough to support the plant and does not look so clumsy and awkward; in fact, it should be hardly noticeable, even when the plants are dormant.

Another type of support for the growing of

vines on buildings is made by nailing strips about one inch square across the wall about six inches apart. Cross these at right angles with similar strips, like distances apart, and you will have an excellent support, especially for twining vines; for rank growers of the wistaria type it is not so good.

Strings are often used as a support, and serve the purpose for annual vines, although wire is much better. But don't use white string if you can get any other colour.

Of course, when it comes to hiding outbuildings, rubbish heaps, and things of that description, where there must be a space left between the object we wish to obscure and the trellis, a different type of construction is necessary. The most common trellis for this work is the slat trellis. This is usually made of slats about one inch wide and one quarter inch thick, nailed diagonally on a framework sufficiently strong to stand the strain of the vines. The slats are nailed flat to the framework, leaving the width of one slat between every two when nailing them on. Get some good posts, put them well down into the ground so there is no danger of their blowing over, and fasten the framework to the posts. Leave several inches space

at the bottom so it will not rot, and a trellis of this description will last a long time.

There is a large variety of ready-made trellises in all sorts of fancy designs, (mostly fan-shaped) that are not worth the trouble of carrying home. In the first place they usually come six to eight feet high and almost the same width. How many vines are there which we can restrict to these measurements? Then they are so very thick at the bottom that it is hard for either a twining or a tendril-bearing vine to get started on them. Lastly, you just reach the stage where you have the trellis nicely covered when it blows over (of course, the iron trellis is not so liable to do this). In general this class of fancy, ornamental trellises has no good points to recommend it, so I would strongly advise the use of home-made trellises. Old bean poles, or, in fact, any kind of rough wood stuck up in an irregular row, is far preferable to these other hideous affairs.

Fences make ideal supports for vines of all kinds. Yet how often is there seen a mile or so of bare fence around a place, when, by a little effort and a very trifling expenditure, it could be turned into a real flower garden. Nearly all sorts of vines do well on fences, but it is better

to let the character of fence govern the kind of vine used. Wooden fences should be covered with vines that are easily removed, so the fence can be painted occasionally. Annual vines of all kinds are excellent for this purpose; also climbing roses, as they are easily removed. Vines of the rootlet type should never be planted on wooden fences — unless it be one of the old-fashioned, split rail kind, which is never painted. Wire fences can be planted with vines of any kind, but twiners are especially good for this work. Vines of the tendril type also do well on wire fences. Climbing roses do well on wire fencing if they are kept tied up a little until they get started. The best roses for this work are *Rosa Wichuraiana* and *Rosa setigera*. Iron fencing is best covered by twining vines, such as honeysuckle or wistaria, but care should always be taken that the plant is tied up the first season. After they are nicely established they will take care of themselves.

The best way to plant is to dig holes along the fence and put in some manure. If the field is used for pasturing cattle, always plant on the side where the cattle are. I have tried both ways and found in planting on the opposite side to the cattle that they would invariably destroy

the vines or break the fence down trying to get at them. I cannot explain the reason for this, unless it is that cattle, like human beings, have that old longing for something which is out of their reach. Of course this is so only where ordinary wire fence, with about a six-inch mesh, is used. If the barrier is solid so the cattle can not get through, or are not tempted, the foregoing advice does not hold.

Screens can be made of all kinds, to be covered with vines, and to shield unsightly objects, or even to act as a shelter for some delicate plant. They can be built of any material, and not only answer the purpose of hiding something but, also, can easily be made attractive. There are numerous opportunities which we could take advantage of, and which would go a long way toward making a place more beautiful. A friend of mine once worked out a very pleasing idea. His garden was small and close to the house, and as outside space also was limited, he had to have the manure for the garden dumped right in the corner of it. So he placed pea-brush around the manure and then planted cucumbers underneath. He not only saved garden space, but entirely shut from view the manure pile. It rests with ourselves,

to a certain extent, to figure out these little problems; they are so common, that it is safe to say that sixty per cent. of our summer homes could be immensely improved by the addition of a few vine screens to turn some unsightly corner into a beautiful picture.

CHAPTER V

Pruning and Management

Necessity of pruning — Pruning for effect — Time to prune — Pruning flowering vines — Pruning foliage vines — Training vines — Staking young vines — Necessity of frequent attention — Keeping vines bushy at the base.

Pruning, in the growing of vines, is an operation which may be termed a necessary evil. If not done by a person who thoroughly understands the work, it is better left alone entirely. More damage can be done in one season by improper pruning than can be repaired in five; so if your experience has been rather limited, proceed with care, feel your way along for a season or two, and the knowledge will soon come to you, if a little time and study are devoted to the work.

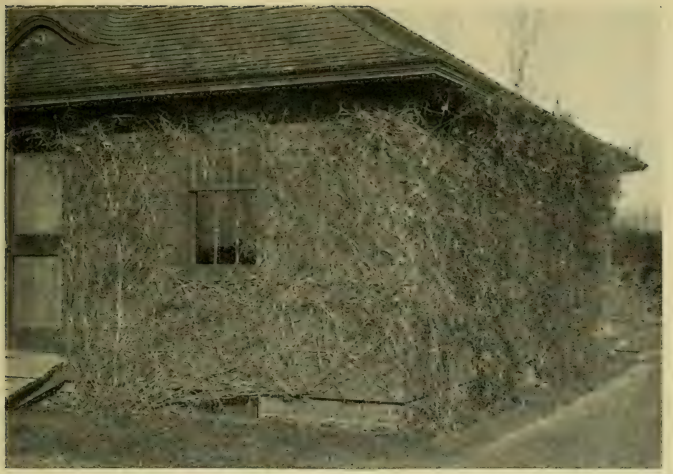
The first and most important endeavour in pruning vines is to try to get as natural an effect as possible. Give the vines a thinning out once in the season, and then let them grow naturally. Don't keep "tipping them back" with the shears;

it makes them look stiff and formal; moreover, vines are not well adapted for this sort of treatment.

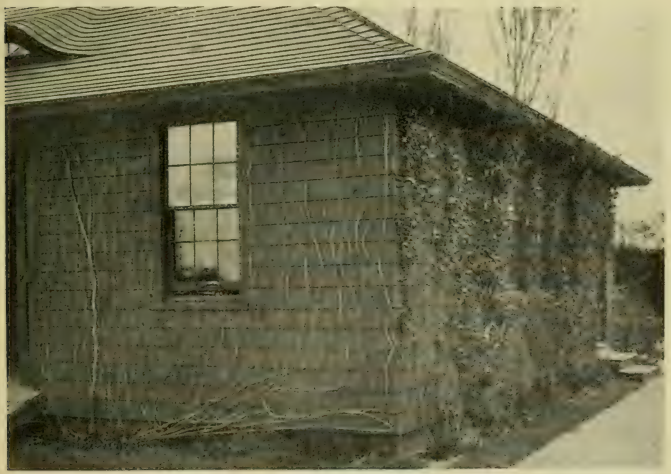
Don't cut vines as severely as you would trees or shrubs, as heavy pruning has a tendency to produce heavy, rank, unnatural growth. Just thin out the shoots if they are too crowded and tip the others back far enough to produce a good, healthy shoot — one that, when matured, will have advanced farther on the object on which it is trained than the shoot you removed would have done.

All spring-flowering vines should be pruned immediately after the flowers fall. Not only should this not be overlooked, but it should be attended to at the first opportunity, as with this class of vines growth starts simultaneously with the falling of the flowers. Positively no tipping back should be done in early spring, as it merely removes a percentage of the flower-bearing wood.

All summer and fall flowering vines should be pruned the first thing in the spring. Don't neglect this work until the growth starts, and don't do it before the winter is spent, as heavy weather will kill back a little all the stems which have been cut, leaving them rather unsightly.



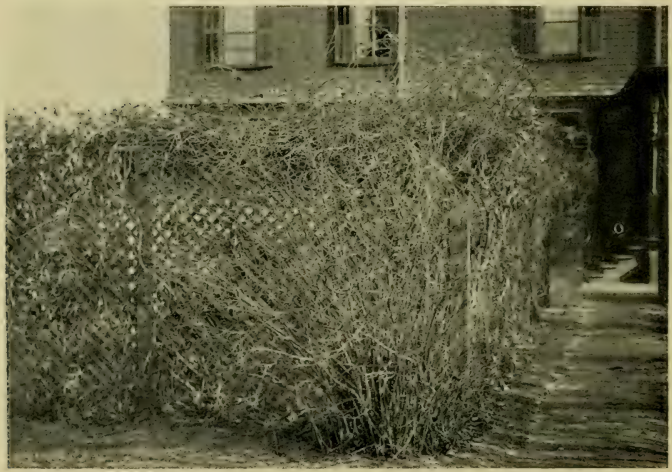
The Kudzu vine (on the front) and climbing roses (on the side) ready for pruning and training



Afterwards. They will now grow where they are wanted, and more vigorously, too

BEFORE AND AFTER PRUNING

As a result of the pruning shown on the preceding page, we obtain this effect



Vines grown as a screen should be thick and bushy. Prune very little in this case

If possible, all very old wood should be removed, as old wood does not produce flowers. Leave enough wood to cover nicely, and consider the condition of the plant. If it is looking poorly, and not growing as it should, cut it back quite hard. If robust and healthy, cut but little; cut close to an eye and you will not have so many dead stubs on the plants.

All evergreen vines should be pruned in spring before growth starts, but it is generally found unnecessary to prune this class of vines at all, as there is nothing gained by cutting them back. Although you can cut these vines at any time, the reason why it is best done in the spring is that the new growth soon hides the cut ends, and the plant quickly assumes a natural appearance.

Deciduous vines, which are grown for foliage effects, likewise must be attended to in early spring. This class of vines can stand a little pruning, as it stimulates growth, and most of them have a tendency to winter-kill a trifle.

Vines which are grown for their ornamental fruit should be cut hard in early spring, as they all fruit on new wood. Do not be afraid to cut these vines, as they are all heavy growers, and, if allowed to carry too much wood, will

soon show the ill effects in the lessened quantity of fruit produced.

One last hint as to pruning: If you are at all timid about the work, there is one thing you can make no mistake in, and that is in removing all dead flower spikes from flowering vines *immediately* after the flowers are spent; but remember, above all, that a little judgment is of more benefit to the plants than all the pruning shears that ever were manufactured. Use your judgment and you will save a lot of work and expense. Size up the vine well before you start to prune it. If it is a flowering vine find out when it flowers — whether on new wood, or wood formed the previous season. Study the requirements of the different vines; do not think they all require the same treatment because they are vines, as there are as many distinct types in the vine family as in any other group of plants. In the management of vines, be patient and yet consistent in your work; if you start out to accomplish an object, don't give up until you have succeeded.

As previously mentioned, the different methods of climbing illustrated by various vines, involve some details of management. With vines of the rootlet type there is very little trouble, as they can ascend almost any object; but with the

other types some assistance must be rendered if we desire them to cover buildings and walls, and it is here that the training of the vine comes in. There are several methods employed in assisting vines to climb. Stretching poultry wire is good, and so is building wooden trellises of some description; but the system which I like the best is that of keeping the vines pinned to the buildings with staples. Of course, this requires a little more care, but you can train the vines better, and a more natural effect can be had than by any other system of training. If you desire a shoot to grow over a doorway or run along the top of a piazza, it is not necessary to have a lot of wire; just put the shoot in the position in which you wish it to grow and then tack it in position with staples.

Get staples that are plenty large enough (they should have a span of not less than one inch to be sure they will not jam the wood), and let them straddle the young shoot. Don't hammer the staple in hard; just give it a light tap with the hammer and leave it so that it can be pulled out easily with a pair of pliers.

As the vines grow, it will be necessary to remove some of the bottom staples, otherwise they would in time cut through the stem. As the

wood swells, take the bottom staples out and drive them in again firmly, but not over the vine this time. Then tie the shoots to the staples with soft, strong cord.

On brick buildings, you can drive the staples where there is a joint in the brickwork. On dry stone walls, make a lot of wooden wedges and insert them between the stones, then drive the staples into these.

After you have planted young vines, do not wait for them to start climbing of their own accord, as they may ramble around for a couple of seasons at the base of the object they are planted about. Get some staples at once and give the young vines a start in the right direction. Keep them pinned to the object they are planted about. I mean by this, all vines, whether they are natural climbers or not. You will find that by this method you save a season, at least; perhaps more.

It is important in the growing of vines not to neglect them. Better spend ten minutes every week training and tying them than a whole month at one time, and then neglect them afterward. Don't let the shoots get so long that they fall over, yet don't keep them all chopped off the same length; the more irregularly they grow, the better they look. Vines of the tendril type

require going over occasionally, because sometimes the tendril of one shoot will wind around another shoot, and if not removed, will ruin it. Vines that are used for covering the trunks of trees should be kept to their original purpose. Don't let them get up in the branches, where they are a detriment to the tree. Keep the vines cut off when they reach the first branches.

Vines which might be termed rank growers, such as wistaria and actinidia, have a tendency to throw all their strength to the top of the plant, and, if this is not overcome in some way, will become bare at the bottom. This tendency must be carefully watched, as a trellis or building looks very unsightly with just a tuft of green around the top. There is one way to prevent this, namely, by keeping young shoots tied at the bottom. With an old plant you can take a shoot down and tie it so the end comes in the bare spot, and then keep it pruned closely, even at the sacrifice of a few flowers.

In training vines upon a piazza, a little care should be exercised so as not to get them too thick. Don't suffocate yourself; train the vines up the posts and you will have a nice effect and also be able to get some fresh air.

It is possible to cover buildings which have a

piazza attached. This takes a little care and time, but is well worth it, as a piazza with the building behind it covered with green is beautiful. Select a shade-loving vine like the English ivy and plant it outside the piazza; trim off all the side shoots of the plant, and when long enough, lay the stem on the ground under the piazza, bore a hole in the stoop deck, and let the vine through; then start training it above the porch floor. Do not plant under the piazza or you will come to grief, as the plant will not get any water or nourishment and will soon die. Do not let the shoots get under shingles, as they are quite capable of tearing them loose. And do not let them grow in and out of the shutters, for not only will the vines suffer by becoming choked, but the shutters will also be rendered useless and even, occasionally, ruined.

The whole secret of having successful vines is consistency in training. Keep them in mind all the time; prune but little, but at those times with a definite object; assist them to take graceful, effective, yet natural forms; then feed and water them that they may reach the highest point of health and development. The most beautiful effects imaginable can be yours, in the surpassing charm of a vine-draped dwelling or arbour.

CHAPTER VI

Insects and Diseases

The insects that trouble vines — Their destruction — San Jose scale — Lime and sulphur — Oil emulsions — Fumigation — Tender insects and their poisons — Caterpillars — Enemies of fruit and vegetable vines — Diseases and how to treat them — Rust — Bordeaux mixture — Blight — Copper carbonate — Mildew — Sulphur — Rot.

Most members of the vine family, being rank growers, are not troubled to the extent that other plants are by insects and diseases. The only exception to this rule is the climbing rose; this is liable to nearly all the diseases that bother plants, although our troubles in this direction can be greatly lightened by the use of a little precaution. Treat the plants before the enemies appear in force, use your judgment, look over the plants occasionally, and remember the old saying that "an ounce of prevention is worth a pound of cure."

As with all plants, the injurious insects that attack vines can be divided into two general classes. The first includes those which eat, and therefore injure the tissues by chewing and biting.

This group is represented by all the caterpillars, larvæ and borers, whether they work on the fruits, stems, foliage, or roots of the plant or inside its tissues. The second class includes small, usually soft-bodied, insects which obtain their food by piercing the outer tissues and sucking juices from the interior of the plant. As examples of this group, we have the various scales, the leaf-hoppers, aphides, and such minute insects.

From this consideration of the kinds of insects and the sorts of injury they produce, we can arrive directly at the general methods of prevention or extermination. For the first group of insects, we need simply provide some poisonous substance in such form that they will devour it. Since in many cases they eat the leaf tissues, this is easily accomplished by covering the leaf surface with a poison, ordinarily an arsenical compound. Of course, where the insects are few they can be removed by hand or killed on the plant, but if there is any liability of their appearance in great numbers, spraying is by far the simpler and more efficient measure.

The sucking insect, in feeding, pierces the epidermis with its boring mouth-parts, or proboscis, and would therefore be unaffected by any poison

existing on the outside surface of the leaf. We must attack it, then, from another direction. One weapon ready for our use is simply water, sprayed over the plant to wash off and drown the pests. This is effective against the red spider, which cannot exist in a moist atmosphere, and against the less persistent forms of scale and woolly aphis. Secondly, we may effectually destroy the insect by mechanical means, such as wiping the leaves with a rag moistened with a soapy solution, or, if the insects happen to be large and few, by picking them off and destroying them. The most common method is by the use of solutions or powders which, sprayed or dusted over the plants, cover the insect's body, close up its breathing pores, and suffocate it. It is the oily, spreading nature of the various forms of kerosene emulsion that makes them useful in this work. One other way to effect this same result, *i. e.*, suffocation, is to fumigate the house wherein the pests are growing with some powerful gas. This is the means by which San José scale is destroyed, both in greenhouses and on nursery stock before shipment, and when imported from foreign countries.

Among the insect enemies that especially bother vines, one of the hardest to deal with is the

San José scale. This must be taken in hand as soon as it appears, or it will, in a very short time, kill the entire plant. When the scale settles on young wood, it causes the development of reddish blotches, in the centre of which the minute insects will be found. The general appearance of the scale on the bark resembles a sprinkling of pepper and salt. If you rub the blade of a knife over the affected surface, the individual scales will come off in enormous numbers. On orchard trees the almost universal spray mixture for destroying San José scale is the lime, sulphur, and salt mixture. But because vines are used to so great an extent for covering buildings, it is often impossible to use the lime and sulphur mixture in this connection without spoiling the looks of the house, unless we take the vine down. This is a considerable task, and can be avoided if some of the more recently discovered scalicides are used. These are mostly crude oil compounds and cause no discolouration wherever they may happen to land.

In spraying for scale, it is important that all parts of the plant be thoroughly covered. To make this result certain there should be a second spraying about one week after the first application. Both may be made at any time when the

plant is dormant, but early spring, when the scale, after a long season of inactivity, is about to begin its active work, is by far the best time. Vines that must be watched especially for the development of the scale include the euonymus, which is the most liable of the whole vine family, the bitter-sweet, the actinidias, the bignonias, and the climbing roses.

The most effective spray material for combatting scale is, as mentioned above, the lime-sulphur wash. In case you are willing to use this, in spite of its staining propensities, the regulation formula is as follows: Quicklime, 20 pounds; flowers of sulphur, 15 pounds; water, 50 gallons. The lime and sulphur must be thoroughly boiled together, hence an iron kettle is almost a vital necessity. Slake the lime rapidly with hot water. As soon as the slaking begins, add the sulphur and stir. When the slaking has ceased, add more water and boil the mixture for one hour, when the preparation will become a rich orange-red. Add the rest of the fifty gallons of water and spray while warm if possible. If steam is available it can be turned into the mixture and the bother of boiling it over a fire be obviated. As stated, this mixture must be used on dormant plants only.

For this work during the growing season, there are various kinds of emulsions, all of which are also useful against the soft-bodied, sucking insects. Some of these, the miscible oils, are already prepared, except for dilution with water. These are certainly the most convenient to use and are not excessively expensive to buy. Kerosene emulsion may be made at home by dissolving one-half pound of soap in one gallon of hot water. Remove from the fire and while still hot add two gallons of kerosene. Churn the mixture violently, or pump it through a sprayer until a creamy, emulsified liquid results. For work on dormant trees, add five to seven parts of water; for killing aphides on open foliage, ten to fifteen parts of water. Whale oil soap is practically as useful as any of these emulsions, and may be made by dissolving a pound of the preparation in five to seven gallons of hot water. This is especially effective against aphides. For the woolly aphis in the greenhouse, the common laundry soap or even Ivory will do.

The use of hydrocyanic acid gas in fumigating is fully described in Chapter XIX. A standard strength, safe to use in any case, consists of potassium cyanide, one ounce; sulphuric acid, two ounces; water, four ounces.

This formula answers for 2000 cubic feet of space. For a larger or smaller house, increase or decrease the amounts proportionately. Never forget, however, that this gas is a deadly poison in the most minute quantity, and handle it accordingly.

Green fly, aphis, leaf-hoppers, and other small insects bother vines a little, mainly in the spring, especially if the weather happens to be very dry. All plants are liable to attacks by these insects, but those most often found to suffer are the climbing roses, English ivy, ampelopsis, honeysuckle, and all annual vines.

The two main remedies for these pests are kerosene or soap emulsions and some sort of tobacco solution. Tobacco is used in the greenhouse both in the form of a powder or as a decoction, when steeped in water. In the latter condition it is especially effective on tender insects and is very convenient to use. When mixing it, always add a little dissolved soap, to make the mixture stick on the foliage better. If a little care is taken to get the solution into the very heart of the new growth, where the aphides are usually found in the greatest numbers, they will usually be done away with. Use a weak solution a couple of times in early spring.

The red spider is rarely present in the greenhouse unless the atmosphere becomes drier than it should be for the good of the plant. Obviously, the preventive measure is occasional spraying. A syringing of the plants will also remove this insect, except in very severe infestations.

Caterpillars, the larvæ of many sorts of beetle and moth, rarely trouble indoor plants. On vines, even outdoors, they are rarely very serious. The Dutchman's pipe (*Aristolochia macrophylla*) is occasionally attacked, but it is rarely necessary to discolour the foliage by spraying, for any insects that bother this vine are liable to be so large and in such small numbers that they can be picked off without trouble. When spraying is not undesirable, the best material to use against the chewing insects is arsenate of lead in the proportion of one pound to ten to twenty gallons of water. A fairly weak mixture is desirable on many vines, although on the tomato, the potato beetle requires a strong dose. Paris green is another form of arsenical poison, but slightly less efficient and more easily washed from the foliage by rain. This, too, is used in various degrees of strength, but always add one pound of lime for every pound of the poison. Either of these poisons can be added to Bordeaux

mixture, thereby making a compound insecticide and fungicide.

The grape is sometimes subject to special insect troubles. The European species (*Vitis vinifera*) is liable to attacks by the dreaded phylloxera, both outdoors and in the greenhouse. This insect first infests the roots, at which time we should take steps against it; then it spreads to the stem and leaves. There are adherents of two methods for destroying it. First, we can remove most of the soil from the bed and flood the roots of the vines, drowning the insects. Or, we can place at six-foot intervals over the border, saucers containing a little carbon bisulphide, which, being a volatile liquid, heavier than the atmosphere, will flow out over the edge of the dishes and sink into the soil, killing the pest. Probably the former is the safer plan, for the carbon bisulphide is extremely inflammable and must be handled with caution, *entirely away from all fire.*

The other vines, valuable for their edible products, described in Chapter XIX, have insects partial to each one of them. Tomatoes are bothered by the potato beetle, which may be exterminated by the use of arsenical poisons. By the time the fruit begins to swell, the beetle

has usually disappeared. The squash family is subject to attacks by cutworms and the squash bug. For the latter, sprinkle lime on and around the plants. It may also have some effect upon the cutworm, although it is ordinarily necessary to poison this plague with a mixture of bran, Paris green, and molasses, or some other liquid to make a pasty mass.

The diseases of vines are practically all of fungous origin, although the parasites work in different ways. Occasionally the attack of a fungous disease resembles the work of an insect, but upon close observation the true nature of the disease can usually be discovered according to the class to which it belongs. Of these classes there are four that the grower of vines may encounter.

Rust usually starts as little whitish-yellow spots on the leaves, which, if not taken in hand at once, grow larger and darker. Eventually the plant succumbs to the effect produced by the growing fungus making its way through and feeding upon the tissues beneath where the spots appear. The leaves that are first affected by this disease should be cut off, and the plant sprayed at the first opportunity. Bordeaux mixture is the great fungicide and probably the

Staples are fine if not left long enough to choke the stem

English ivy is independent and needs no support whatever

ALL VINES DO NOT NEED SUPPORT

The combination of a north wall and a heavy drip may kill the leaves, but not the vine itself

Here the drip requires the removal of the dead leaves each Spring thus making room for a new crop

chief remedy for rust, as well as other diseases of ornamental plants. This is a mixture of copper sulphate and lime in the proportions of four pounds of the former, six pounds of the latter, and fifty gallons of water. The lime should be slaked and the copper sulphate crystals dissolved in separate wooden or earthenware vessels; then the two solutions are diluted with part of the water, poured *together* into a third vessel, and the rest of the water added.

Blight is a disease of a peculiar nature. A plant may seem healthy when, apparently without cause, one shoot, or perhaps several, will wilt, wither, and die. Or it may affect the leaves in the same manner. The remedy is as before — Bordeaux mixture; or, if the season is so advanced that the fruits are maturing, ammoniacal copper carbonate may be used with the same results, but without any injury to the appearance of the foliage. This is made by diluting three pints of ammonia with seven or eight parts of water, making a paste of five ounces of copper carbonate and a little water, and adding it to the ammonia; then add water to make fifty gallons and use as promptly as possible.

Mildew is also a fungous disease, although it may not appear similiar to the others. In this

case the tissues of the fungus, or parasitic plant, appear on the outside of the leaf or fruit as a white, powdery, or downy substance. Since the nature of the disease is the same, its treatment will correspond with that for other fungous diseases, except that in greenhouses, flowers of sulphur can be used with considerable success and a great degree of simplicity. Sprinkle it on the plants in the morning, if the day promises to be clear, for if cloudy there will be no beneficial effect. That is, the fungicidal value of the sulphur depends upon the fact that it is oxidized by the sun's action, and the sulphurous acid that arises kills the fungus.

Fortunately the fourth group of fungous diseases, that is, the rots, does not bother most vines. Its most severe form is illustrated in the case of the black rot of grapes. Either Bordeaux mixture or the copper carbonate solution should be used, although careful cultivation and the destruction of all prunings and litter about the vineyard will aid greatly in warding off this disease.

Vines that should be watched for the appearance of fungous diseases are grapes, roses, some members of the clematis family, the cucurbits, and all other annual vines.

Finally, there are some diseases which arise from a lack of constitutional vigor in the plants, which, in turn, is commonly caused by poor care and failure to furnish some important food material. If such a condition seems present in your vines, you will have to study the situation a little and discover what is lacking in order to supply the necessary treatment.

The sum and substance of the principles of spraying for insects and diseases is not difficult to understand. If something is the matter with your vines, study the nature of the trouble and the symptoms, and satisfy yourself that you know what insect or disease is at work. Then study its habits, its life history, determine just the treatment that is needed, then give that treatment comprehensively and thoroughly until the enemy is dissipated.

But better even than this defence, efficient though it may be, are preventive measures. By means of these we prepare for the appearance of insects and diseases, and lie in wait for them, as it were, with fungicide and insecticide already on the plants.

And yet, even that point of view is not the highest and best. Instead of fighting the pests, or expecting and getting all ready for their in-

vasions, give your plants such care all the time that the diseases will find no weakened tissues on which to become established; feed the vines, water them, cultivate the ground about them until they take joy in growing, and develop constitutions that will themselves resist the attacks of all enemies.

CHAPTER VII

Winter-killing and How to Prevent It

Dry and wet locations — Mulching for shallow-rooted vines — Vines in the rockery — Weak rooting causes winter-killing — Heavy vs. light soil — Plants that kill from the top — Trouble with animals.

When a vine winter-kills, there is something wrong. Either the plant is not hardy enough to stand our winters, or the local conditions are not favourable. Bad location is one of the worst enemies of vines and often leads to winter-killing, but there are sometimes causes that are beyond our control. Winter-killing is noticed chiefly whenever the plants are in an exceptionally dry or an exceptionally wet location. To prevent this, then, we must mulch very heavily in dry locations, and drain, in some way, places where the water lodges in winter and spring.

We often find the winter-killing more severe among plants that are not deep rooters, and further, it will sometimes be noticed that these kill back a great deal in comparatively mild winters. This can be explained only in one way: The

frequent changes, in the alternate freezing and thawing, rot part of the root system, and, with some of the roots killed, the plant cannot support all the top. A mulch is the only preventive of this, as it keeps the ground in a more uniform condition, but the mulch should not be applied until after the ground is frozen a little.

Vines growing in a rockery, or, in fact, any raised mound of earth, will kill back very badly sometimes. This can be attributed to a lack of water, for being raised, the ground, after freezing a little at the surface, will turn off the rains and become very dry underneath the frozen crust. Of course, plants do not require as much water when in a dormant state as when growing, but they do need enough to keep the roots from withering. If supplied with this necessary amount the plant maintains enough action to keep the top alive. Lack of moisture kills more vines during winter than all other troubles combined. I would suggest, as a preventive for this, giving the plants a thorough soaking in the fall, then covering them with a good mulch. In this case, do not wait for the ground to get frozen, as the idea is to retain as much as possible of the moisture already there. The higher the mound, the heavier should be the mulch. The

same suggestion holds good where vines are planted about buildings located on terraces. The latter not only freeze and shed water, but are often so exposed as to be subject to the additional drying action of the wind.

Another reason for vines winter-killing is poor condition of the soil. Some slow-growing plants, if planted in poor, impoverished soil, will kill back a great deal in winter. In fact, it seems to be all they can do to keep their vital roots and crown alive. The reason for this is that the roots can support only a limited extent of top, and the balance must perish. On the other hand, really tender plants, such as the jasmines, some of the clematis family, and some climbing roses, will not kill back as much in a light soil as they will in a rich, heavy soil which gives rise to a lot of top growth.

This statement may seem misleading, but here are the facts: for vines that are very hardy, and that never show any signs of winter-killing, the soil cannot be too rich; but vines that are considered tender, especially weak-rooters, will pass through the winter much more safely if the soil is not so rich. The reason is that, first, in a light soil a plant will not make as much growth as if the soil were heavy, but the growth will be

healthy and short jointed; and, second, the plant will stop growing earlier in the season than a plant which is located in heavy soil. This extra time is utilized in ripening the wood, and thus preparing it for the attacks of a heavy winter. In other words, the universal law of the survival of the fittest produces, amid the less congenial surroundings, a strong individual that can better withstand the rigour of the winter season.

Grafted plants often kill from the roots. It is hard to explain the reason for this, as grafting is usually resorted to to improve the hardiness of a plant, but probably, in some cases, the graft itself weakens and the top slowly dies the following season.

In addition to the plants that winter-kill because of root troubles, as illustrated above, there are some vines which kill to the ground each winter, then start a very vigorous growth in spring, showing plainly that the roots are uninjured. The Kudzu vine (*Pueraria Thunbergiana*) is a good example of this class. It is commonly called an herbaceous vine in this latitude, but I have found it hardy with a little winter protection. Ordinarily, to protect tender-wooded plants from winter-killing, we must

cover the tops in some manner. Straw can be used for this purpose, or pine or spruce boughs cut in the woods and stuck up against the plant. I have also seen canvas stretched across a vine to save it; but the best method is to take the vine down, lay it out very carefully, making sure that none of the branches is bent very much and apt to break, then cover the tops with leaves, stable litter, or soil. The number of supposedly tender plants that can in this way be grown in this north-temperate latitude will astonish you.

With very tender plants pursue the same method, only first cover the tops with soil, well mounded up, so that it will to some extent shed water. After the soil develops a little crust of frost, apply the mulch of leaves, letting the hardiness of the plant determine the thickness. Put some rough stable litter on top of the leaves to prevent them from blowing away; do not use anything heavy for this purpose, as it packs them too tight. After each heavy snow-fall, shake the leaves up well, and do not, under any circumstances, let them get caked and frozen into a solid mass, as the frost will then surely reach the plant, for it goes through solid matter much more quickly than through loose material.

In this way you can winter plants that are considered, by some people, tropical. Such gems as the Maréchal Neil rose and the sweet-scented jasmine (*Jasminum officinale*) can be grown outside as hardy vines; and surely, either one of these plants would pay for the labour involved.

Plants so situated, on the south side of a building for example, as to be in a continual drip in winter will sometimes get killed back. The winter-killing in this case is quite out of the ordinary. The drip during the day covers the vine with water; this freezes and forms a coating of ice on the vine which becomes very heavy; then, perchance, the wind springs up shaking the vine considerably, and causing some of the stems to crack. The only preventive is covering the plants to protect them from the drip, the best way in each case being easily determined according to the local conditions.

Animals often cause trouble with various kinds of vines in winter, but not more so with vines than with other plants. Ground moles will sometimes destroy the roots; but it is not only their eating of the roots that causes trouble, but also the fact that they sometimes loosen the soil about the roots, causing them to dry out, and the vine, perhaps, to die. Whenever you see a ground

mole's track, do not fail to tread the soil back in place.

Rabbits will sometimes eat the bark of vines and other plants during a very heavy winter, when they cannot very well forage. This causes the vines to die slowly the following season. There is not much to be done to prevent this beyond wrapping the base of the plants with tar paper in the fall.

CHAPTER VIII

Annual Vines

Desirable because of quick results with little care — The morning glory's appeal — Vines for cut flowers — Good red blossoms — Various other vines.

Annual vines are sought by many people because they are very little trouble to grow, requiring neither pruning nor mulching. They give quick results, and can be utilized to create good effects while the permanent vines are developing. For frame buildings, where frequent painting is necessary and where a woody vine would have to be removed and put back later, they are in great favour. Again, if a large display of flowers is sought, the annual vines surpass most others, because the majority of them start blooming in June or July, and continue to flower until cut down by frost, whereas woody vines have a short flowering season which cannot be prolonged to any great extent.

On the other hand, the annual vines cannot be expected to grow to the great height which

hardy perennial vines, like the ivy or wistaria, will attain. By annual vines, in this connection, is meant vines that endure outdoors but one year, and so must be started from seed each season. Some tender perennial vines (which may be hardy in the South, but which will not stand northern winters) are included under this heading because they give the best results in this latitude when treated as annuals.

THE POPULAR MORNING GLORY

The most popular of all annual vines is the morning glory (*Ipomæa purpurea*), because it requires little or no attention other than the sowing of the seed; and as the seed is both freely produced and hardy, the morning glory reseeds itself. Although this is advantageous in some cases, care needs to be taken to prevent the seed from falling among choicer, more delicate plants, which would quickly be smothered. The morning glories grow surprisingly under uncongenial conditions, but for best results they should have a sunny location, a deep, heavy soil, and an abundance of water.

Seed can be sown out of doors about the middle of April, in which case the vines will start to flower toward the end of July. But if seeds

are sown in the greenhouse or frame about the middle of March, the plants kept potted on as they grow, and planted out about May 1, the flowers will be had about one month earlier. Before sowing the seed, break the hard skin in some way; make a small notch with a file, or soak the seeds in warm water for twenty-four hours. Either course will greatly hasten germination, but I prefer notching.

There are numerous varieties of morning glories of which the colours range through shades of blue, purple, pink, white, crimson, scarlet, and variegated. The flowers are funnel-shaped and are about three inches across. The plant is a twiner, and clings well to almost any kind of a support, not too big in circumference, for, as with all twining vines, the morning glory must be able to entirely encircle a support before it can ascend. A circumference of five inches should not be exceeded in the support of any annual vine that twines. According to the conditions governing their growth, they will attain a height of from six to ten feet.

The Japanese, by their consistent efforts, have improved one type of the morning glory, variously referred to as Japanese, Emperor, and Imperial, to such an extent that it is now considered to be

the best of this really large family, when the beauty of the individual flower is looked at. The breeding of this plant amounted to a popular craze in Japan almost a century ago. Books were written on the subject and as much as eighteen dollars was paid for a single seed. The Japanese morning glory (*Ipomœa hederacea*) differs from the common morning glory in that the foliage is deeply lobed instead of heart-shaped, the flowers are larger, and the colours more diversified and brighter, the growth is a little more dwarf, and the plant branches more freely. There is one good reason why this plant is not as popular as the common morning glory — poor seeds. It is hard to get a good strain of the Japanese morning glory. Once you get a good strain of this selection, it is wonderful, and the best way to keep it is to save your own seed each season. This vine requires the same treatment as the common morning glory.

VINES FOR RED FLOWERS

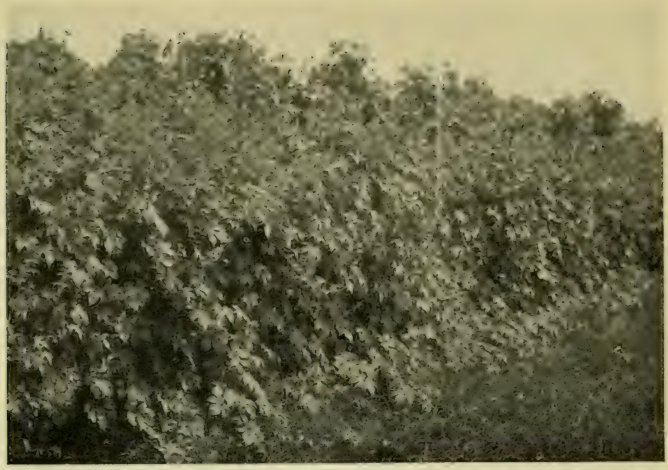
The most effective red-flowered annual vine is the cypress vine (*Ipomœa Quamoclit*). Understand, I did not say the most gorgeous, but the most effective. This plant, with its delicate, fern-like, feathery foliage and its little, tubular,

scarlet flowers (about an inch long), which are abundantly produced and which stand out prominently against the dark green foliage, is most fascinating — especially in the early morning before the flowers close up, or in the evening, just after sundown, when the blooms expand once more. As in the case with most members of this family, the flowers are not expanded to the full sun. This vine is a good, strong grower and will attain a height of fifteen or even twenty feet under favourable conditions, which are about the same as the morning glory requires. The cypress vine, however, will do well in partial shade. There is also a white variety, but it is not so popular. On a post or pillar, the two may be combined to excellent advantage.

For the busy suburbanite, who is away from his home during the day, and whose only moments of gardening are in the early morning or the evening, the moon-flower (*Ipomœa Bona-nox*) is especially good. The great, saucer-like, white blossoms, six inches across, open in the evening and stay open all night or until the direct sunlight strikes them. When it is cloudy the flowers will stay open all day. They are produced in clusters, endure well, and are quite fragrant.

A VINE OF GLOWING COLOURS

Is any vine better known than the tall nasturtium (*Tropæolum majus*)? Its range of uses seems unlimited. But use taste in combining its many hues



The wonderful annual Japanese hop supplies both foliage and flower effects in a thick mass

Dutchman's pipe and honeysuckle blend beautifully their dissimilar foliage masses

VINES MAY BE USED ALONE OR TOGETHER

There is something about the moon-flower that appeals so strongly to most people who see it that I feel sure that if it were better known it would be more popular. This also demands the same general treatment as the morning glory. The east or west side of a building is the best exposure for the moon-flower. If the plant is on the east side, the flowers will open early in the afternoon; if on the west side, the flowers will stay open till noon. Plant one vine on each side and you can have moon-flowers all day, but avoid the north, as it is too shaded. The seed must be cut or filed, for without this help fully fifty per cent. will fail to sprout. For best results, plants should be started in the greenhouse during March. Some florists raise them in large numbers and the plants can often be bought quite cheaply. Under favourable conditions, the moon-flower vine will grow to a height of twenty feet. As it grows rapidly, its lobed foliage making a dense mass, it is an excellent screen.

A similar plant is *I. rubro-cærulea* which was brought into prominence in California by the introduction of the variety Heavenly Blue. It grows to twice the height of the common morning glory, or, say, twenty feet. The flower

is red before expanding, but becomes finally a clear blue, sometimes splashed with red. The plant is much branched, and is among the most serviceable of the annual vines for screens, as it grows very rapidly. Beside the grand colouring of the flowers, a reddish purple is often seen here on the stems. If grown for its flowers, it should be treated as a greenhouse plant. When grown outdoors it should be planted in a large box or tub and in a rich soil, if its flowers are wanted, because, if the roots are not restricted, the plant will run to vine. The Heavenly Blue variety is the only morning glory of that colour.

The most vigorous grower among the morning glories, and certainly one of the most beautiful, is the Brazilian (*I. setosa*). The tubular flowers, about four inches across, are of rich rose shades, and the foliage is very heavy and thickly set. When given an early start, the Brazilian morning glory will climb thirty feet. The variety Northern Light, which has lavender-pink flowers, has been known to reach fifty feet.

The most freely flowering of all the morning glories is the star ipomœa (*I. coccinea*). This is a mass of bloom, although the flowers are very small, even smaller than those of the cypress

vine. They are scarlet, with a yellowish throat. The foliage is attractive, the leaves being very long and pointed at the lower end.

There are several other plants of the ipomœa family, but they are of lesser importance. In the changeable ipomœa (*I. versicolor*, also known as *Mina lobata*,) the flowers, opening rich crimson, fade to a pale yellow. The maximum height is twenty feet. The stems are of a purplish colour, the leaves smaller than those of most of the family, and the flowers, which are about four inches across, are either blotched and shaded with rose and white or entirely rose colour. It is a free bloomer, and its flowers are quite different from those of any other member of the family, being bag-shaped and produced several on a stalk, recalling, very roughly, it is true, the inflorescence of some of the beans.

All the ipomœas, being twiners, are right at home on fences of every kind, and will also ascend strings; but any ordinary trellis will answer the purpose as a support. A good strain of seed of the different varieties is hard to secure, so the gardener should be careful to save his own, if he finds a good one. This is a perfectly

simple matter, for seed is produced very freely, and there is no danger of deterioration of the strain.

FOR CUT FLOWERS

As an annual for cut flowers, the sweet pea (*Lathyrus odoratus*) stands preëminent. It is known and grown all over the civilized world wherever flowers are cultivated, and, each succeeding year, becomes more popular as a source of cut flowers. Beside being treated as a hardy annual vine for summer flowers, it is grown under glass for winter bloom, and is as regularly seen in the florists' stores as the rose and the carnation.

Sweet peas are grown in a great many different ways, and, undoubtedly, there are good points about each method. My best results have been obtained by the following method of procedure: as early in the spring as possible, say about March 15, near New York, dig a trench the width and depth of an ordinary garden spade. Into this put a layer of chopped sod about three inches deep, covering this with about four to five inches of good manure. Then, with a digging fork, mix the sod and manure, and over this put a layer of good soil, about two inches deep.

Level off in the usual way, and the trench is ready for the seed. If properly prepared, the trench should be about five inches lower than the surface of the ground. Sow the seed evenly in a thin row, and be sure that no manure comes in actual contact with it. Use from ten to twelve ounces of seed to one hundred feet of row, and always label the variety plainly. Cover the seed with about two inches of good soil. When the seeds germinate and the young seedlings are pushing through the soil, keep sifting good, fine, friable soil directly on them, so as to leave only the extreme tip of the growth above the ground. Keep doing this until the soil in the trench is level with the surface of the surrounding soil. The importance of this detail lies in the fact that the roots of the plants will be well down in the earth and will not feel every little surface drought; for, it must be remembered, it is the dry weather that is the ruination of sweet peas. In case of a late frost, protect the young plants with newspaper, loose stable litter, or something of that kind. Although the frost will not kill them, it will cause them to turn yellow, and a short crop will be the result.

When the young plants are above the ground, they should be hilled up to give protection

against the wind. The supporting brush or other material must be put in at this time or before. It is important not to delay putting up the support until after the young plants have grown over, for if they once begin to sprawl on the ground there is much difficulty in getting them started up again. As to the support, brush is by far the best; next to that poultry wire. In the latter case it may sometimes be necessary to stretch wire or string on each side of the row to keep the vines in place.

When the weather gets hot and dry, mulch with stable litter, grass clippings, or, in fact, anything that will help retain the moisture in the soil and give an abundance of water at the roots. When the plants flower, go over the row every day picking the blossoms, whether you can use them or not. If you do not do so, the plants will produce seed; and when they do that they stop flowering.

There are many varieties of sweet peas, and although at a cursory glance some may seem to be duplicates of others, you will find slight differences on close inspection. There is no necessity of growing all the varieties the seedsman offers; make a selection (all named varieties), growing as many as you can the first season and selecting

for future use those that you like the best. I advise against the use of a mixture of sweet peas, because if you desire to gather flowers of a certain colour, you must travel over the entire row to get a sufficient quantity. By sowing each variety separately, you can pick the different colours as you want to use them, and it is an easy matter to mix them after they are cut. Sweet peas can be had in all the various shades of red, carmine, pink, blue, brown, and white; there are also some varieties termed yellow, but in reality they are a sort of creamy white.

My own selection of early flowering varieties is: Mont Blanc, white; Earliest of All, pink; and Blanche Ferry, pink. These three are the earliest and should be planted away from the others, as they are more dwarf and are the first to look unsightly in the row. From seed of Earliest of All, sown March 8, 1906, I picked sweet peas May 26.

For rugged vigour and flowers on good, long stems (for cutting), I like Apple Blossoms, Gladys Unwin, Her Majesty, and Mrs. Dugdale, pink; Blanche Burpee, Dorothy Eckford, Sadie Burpee, Maid of Honour, and Emily Henderson, white; Captain of Blues, Celestial, Navy Blue, and Lady Grisel Hamilton, blue; Coccinea, Firefly,

King Edward VII, and Salopian, red; and Coquette, Hon. Mrs. Kenyon, Primrose, and Queen Victoria, cream-coloured (catalogued as yellow). In variegated colours I prefer Mrs. Joseph Chamberlain, white and rose; Gray Friar, heliotrope and white; America, deep red and white; Lottie Eckford, rose, white, and blue; Maid of Honour, white and lavender; Princess of Wales, mauve and white; and Senator, violet and white. However, the real quality type among sweet peas are to-day represented by the Spencers, which are available in all possible shades. Although it is hard to get strong germinating seed of these varieties, the beautiful flowers are worth the effort.

If proper care be taken, sweet peas can be made to flower well into August, but then the foliage turns yellow and the row gets to look unsightly. On account of the great freedom with which they produce their flowers during early summer, sweet peas are usually given a prominent position in the garden, and it is a hard matter to find something to replace them or to fill the big gap made by their death. One grower advocates sowing the tall nasturtiums (*Tropæolum majus*) along with sweet peas. Then, after the sweet peas are through flower-

ing, the nasturtiums will continue right on till frost.

GORGEOUS RED FLOWERS

Of all red-flowering vines the most gorgeous is the scarlet runner, or fire bean (*Phaseolus multiflorus*). The blooms are produced in racemes of from ten to thirty flowers on a spike and are a rich scarlet. One great point in favour of this vine is its adaptability to almost any situation. Just put the seed in the ground, give the plants something on which to climb, and you will have a blaze of colour the entire summer. A package of seed, costing ten cents, will accomplish wonders in redeeming a dingy back fence. A row of scarlet runner in front of the Lima bean poles adds good colour to the vegetable garden all summer. Moreover, the bean of the scarlet runner is not to be despised for the table. It is highly esteemed in England, where it is one of the standard garden crops.

The scarlet runner likes the sunshine, but it will do well almost anywhere, so long as it does not suffer for want of water during dry weather. Although drought will not stop the flowering, it will cause the foliage to turn yellow. The seeds may be sown out of doors about May 1;

the vine will start to flower the middle of July and will continue till frost. Sow when the ground is dry, and in case of excessive rainfall, cover the ground over the seeds with a small piece of glass or wood. The seeds will rot if they get too wet before germination. The scarlet runner is a twiner, but requires a little tying to its support until established; after that the vines will take care of themselves. Under good cultivation, the plant attains a height of ten to twelve feet. There is a white form which many prefer to the red for the garden, called the Dutch case-knife bean.

A newer ornamental bean is the butterfly runner (*Phaseolus multiflorus* var. *papilio*). It is just as floriferous as the other two varieties, with larger individual flowers, and the wings, which are pure white, expand better. The standards are a salmon brown. Its familiar relative, the Lima bean (*P. Lunatus macrocarpus*), is grown solely for the table, but is not to be overlooked as a possible ornamental vine on trellises, where the main object is a screen of green foliage.

A very good vine of easy cultivation is the popular hyacinth bean (*Dolichos Lablab*). The flowers are a reddish violet and are produced on a raceme, borne well away from the foliage,

on a rigid stem six to eight inches long. They are a trifle stiff in appearance, but this vine's certainty of growing and flowering without any attention is sufficient justification for its cultivation. The seeds can be sown out of doors, but as is the case with most annual vines, a gain of about four weeks results from sowing them in the greenhouse during March. The hyacinth bean is a dwarf twiner growing six to eight feet. There is also a white form, with a seed pod of creamy white, instead of violet green.

GROWING FLOWER AND LEAF

For something very frail and delicate, yet not at the expense of beauty, I recommend the Allegheny vine (*Adlumia cirrhosa*) which, though a biennial, flowers the first season. It is a great favourite of mine, especially for planting beside a dead shrub over which it will quickly clamber, covering the eyesore with its delicate foliage, which is similar to that of the florists' maidenhair fern. Its pretty, pale pink flowers are freely produced, giving a tone and effect hard to reproduce. I always feel that, were this an exotic and not a native, we would value it more highly. Though the Allegheny vine is a twiner, it is a weakling and requires a little attention at all

times to keep it properly trained on any object. Provide a good, sunny location and light yet well-enriched soil, and this vine will grow to a height of fifteen feet, forming perfectly fairy-like festoons of flowers and foliage.

Another climber, valuable alike for both leaf and flower, is the cup-and-saucer vine (*Cobœa scandens*). The foliage is green, but the stems and the veins of the leaf are tinted with purple running into a peculiar bronze hue, so pronounced that, at a short distance, the entire plant has a decidedly bronze appearance. The growth is loose, very irregular and uncertain in its direction, thereby adding still more beauty to the plant. It is an excellent boundary fence vine. The flowers greatly resemble in form those of the cup-and-saucer Canterbury bell (*Campanula Medium* var. *calycanthema*) and are of about the same size; hence, the common name. Their colour is greenish purple, and although not produced in overwhelming quantities, they are sufficient to justify the use of the vine as a flowering plant. It is, therefore, well adapted to porches and city gardens.

The cup-and-saucer vine is a good grower, reaching a height of twenty feet, clinging very close to its support by means of the tendrils with

which it is abundantly supplied. I have found that it is most comfortable in a sunny location, if kept freely watered during the summer, but it will also do well in not very densely shaded places, such as the east or west sides of buildings. There is, however, one essential point in its cultivation: never plant it close to other large plants that will interfere with its root action. It is a rank rooter, it must not be restricted in any way, and should have an abundance of good soil. The seeds should be sown in the greenhouse or frame not later than March to give really good results. If seed is sown about February 15, the plants will be in flower by July 15. The seeds are shaped much like the scales of a fish, and will germinate much more rapidly if sown edgewise. It is not advisable to sow the seed out in the open. Transplant the small plants singly into pots as soon as they are large enough to be handled easily, and never allow them to become pot-bound; if that occurs, there is a tendency toward a hardening of the wood and a stunting of growth. Until they are set out in their permanent places, keep the plants tied to a stake of some kind, driven into the ball of roots.

There is a white variety, but it is far less attractive, the foliage being without the purple

bronze tinge. The foliage is whitish and the stems and leaf veins are a yellowish white. There is also a variegated form, but, on account of its slow, weak growth, it is not much esteemed.

THE BEST FOLIAGE DECORATIVE VINE

Without any doubt, the grandest and best of all annuals for foliage is the Japanese hop (*Humulus Japonicus*). The large leaf measures from six to seven inches across, and by its rapid growth the plant will soon hide an object from view. The stem and under side of the leaves are covered with a hairy substance, which will irritate the skin of a person coming in contact with it. Do not plant this hop close to any slow-growing vine, like the nasturtium or morning glory (six feet is a safe distance), as its rank growth will overpower its neighbour and kill it. The characteristic, pretty flowers appear in August, but they do not last long. They are produced in large panicles and have a general resemblance to the flowers of the smoke-bush, only they are lighter in colour. It is unfortunate that the beauty of the flowers is counterbalanced by an unpleasant odour, but as you need to get close to the vine to catch the odour in any great strength,

that fact should not interfere with the planting of the hop as a garden subject.

Seeds can be sown out of doors about the middle of April, but much better plants are raised by sowing in the greenhouse or frame about the middle of March. This does not hasten the time of flowering to any marked extent, but by earlier sowing you get a much larger plant; after the flowering period, all growth ceases. The hop climbs by means of tendrils and is a good, close clinger, growing to a height of ten and twelve feet. A good point about this plant is its free-branching habit. The branches stretch out horizontally to such a degree that an almost square space will be well covered. It needs a sunny location and should be watered freely during dry weather. There is a variegated form (*H. Japonicus* var. *variegatus*), much more ornamental than the type. The leaves are white and green, beautifully mottled and striped, and, unlike most vines wherein the variegated form is weaker in growth than the type, it is just as strong a grower, and is usually preferred for planting near a house.

THE EASIEST VINE TO GROW

Very popular in countryside gardens everywhere, because it requires so little attention, is

the tall nasturtium (*Tropæolum majus*). This vine is grown for its great profusion of flowers, and, although not so valuable as the sweet pea for cutting, it has many good qualities.

Nasturtiums can be had in flower early in June, if the seed is started in the greenhouse about the middle of March. They will flower about the middle of July if sown out of doors. A common blunder in planting nasturtiums is the mixing of different colours; a mass of one colour is always more effective. Buy named varieties and sow them separately. After the plants are a few inches above the ground thin them out to not less than four inches apart; crowding is the one great cause of yellow foliage in the case of all annual plants.

Of all the nasturtiums sown, it would be safe to say that seventy-five per cent. are of the yellow or orange shades, but there are great possibilities for garden effects in the use of scarlets, crimsons, and browns. Beside, a little variety is good for its own sake. Recent novelties offer a rich selection.

The nasturtium will stand a lot of abuse, but it must have water during dry weather, as otherwise the leaves will turn yellow. Another cause of yellow foliage is planting in too much shade;

it prefers the full sunshine. The seed pods of the nasturtium are gathered by some folks and pickled as a substitute for capers. The leaves are also used as a salad, but are not popular, for the flavour is very pungent. The nasturtiums are twiners and are rather dwarf in habit, six feet being about the maximum height. A taller climbing form is found in Lobb's climbing nasturtium (*T. Lobbianum*). This vine has finer colours than the common nasturtium, and the leaves set out farther from the stem of the plant, giving it a looser and more attractive appearance. This variety will run up to eight feet.

VINES WITH YELLOW FLOWERS

The best yellow-flowered, annual climber is the canary bird vine (*Tropæolum peregrinum*), which is not so well known as it deserves to be. The colour of the flowers is a clear yellow, a colour that is seen in but few vines. To get the canary bird vine to do its very best, the seed should be sown in the greenhouse or frame about the middle of March. The plant will then flower by July 1 and continue blooming until frost. If you have no facilities for starting it early in heat, the seed may be sown in the open ground, but the results will not be so satisfactory, as it

is not likely that flowers will be produced before September 1. Then the cool nights are almost sure to check its growth. Since the plant loves the heat and does best in a hot, sunny location, it will do reasonably well in a dry situation, and even on that account alone is valuable. Under favourable conditions, and given a long season of growth, it will cover a trellis to a height of twenty feet.

The canary bird vine, like the morning glory, varies greatly in quality and floriferousness, and not infrequently fails to give satisfaction because of the use of seeds from a poor strain. Indeed, it is often said to be a shy bloomer. If you do get a good strain, save your own seed. The plant is a twiner, but makes a tender, succulent stem and should be afforded a trellis that will hold it well in position. It is also well adapted for use as a trailer for boxes, hanging baskets, etc.

VINES FOR BASKETS

A very delicate little vine, very free-flowering and especially adapted for hanging baskets, is the thunbergia (*Thunbergia alata*), a tropical plant which is killed to the ground at the slightest touch of frost. The flowers, white, buff, or

orange, are very freely produced. It is no use trying to grow this beautiful vine unless the seed can be sown in the greenhouse about the first of March and the young plants kept potted on and never allowed to become pot-bound. Under this treatment, they will start to flower in July or August and continue till frost. Although requiring a little extra care to get it properly started, the plant is in a class by itself as a flowering vine for veranda work. About six feet is its maximum length, and usually it does not get above four feet. It is a twiner and clings well.

A very pretty little vine, with orange-scarlet flowers in great profusion during July and August, is the rough eccremocarpus (*Eccremocarpus scaber*), a tender, perennial evergreen in the South, but treated as an annual in the North. This plant grows freely, clings by means of tendrils, and attains a height of ten feet. The light green foliage is bipinnate, with the leaflets sharply incised, and as the growth is loose and the foliage sparingly produced, the plant has no value as a screen; like the Allegheny vine, which it resembles in growth, it is valued only for the beauty of its foliage and flowers. The fruit, too, is very attractive.

The seeds of the eccremocarpus should be started in the greenhouse during March and the young plants potted on and never allowed to become pot-bound. The young plants should not be set out before the middle of June in the North, as they need a warm, sunny location. From seeds sown in the open ground, but little success can be had; the vine requires abundant heat, and by the time it is warm enough to sow the seeds out of doors (June), the time remaining for growth is too brief to allow the plant to develop.

A vine often treated as a greenhouse subject, from which satisfying results are obtainable, is the maurandia (*Maurandia Barclaiana*). The flowers of this delicate vine are varied — rose, white, purple, or blue. It needs a little attention and a good support to enable it to run up to ten feet, as it is a rather frail climber, clinging by twisting its leaves and petioles around the support. The leaves are thickly set and sharply incised, and the whole plant is attractive. For the best results, sow the seed in the greenhouse about March 1.

A near relative of the maurandia, which name it formerly bore, is the climbing snapdragon (*Antirrhinum maurandioides*). It is almost iden-

tical with the maurandia, save that the throats of the rather tubular flowers are closed, while those of the maurandia are open; and the foliage, instead of being incised, is lobed and similar to the common ivy. This vine, which deserves to be far better known, should have a good, sunny location. Sow the seed in the greenhouse about March 1 and the vines will attain a height of six to eight feet out of doors.

The only really good shade plant among the annual vines is the Kenilworth ivy (*Linaria Cymbalaria*). This is a capital ground cover for shady places, and is very attractive, being covered all through the season with small lilac flowers. It self-sows freely.

CHAPTER IX

Herbaceous Perennial Vines

What herbaceous perennial means — Pruning and mulching — Watering, lifting, and dividing — Everlasting sweet pea — Sweet peas for wet soils — Herbaceous clematis — Madeira vine — Ipomœa — The hop — Cinnamon vine — Air potato — Ground-nut — Butterfly pea — Bryony — Convolvulus family — Trefoil.

An herbaceous perennial vine is one that produces an annual stem from a perennial root. In other words, the top dies each year but the root lives indefinitely. Such vines require no pruning, but the dead stems should be removed early each year. This is quite a troublesome process if left until spring as the stem gets hard and wiry. The best plan is to cut the plant to the ground in late fall and then to easily remove the stems while they are soft and pliable. It is advisable, with all these vines, to mulch during the winter with a good covering of well-rotted manure. This adds to the ground plant food, which is often required, as these plants are, on the whole, vigourous growers and rank feeders.

Most of the vines included in this group are continuous bloomers; that is to say, they do not flower in a given season, but prolong their blooming until cut down by frosts. Vines of this sort should never want for water, as they are constantly using energy to develop their flowers.

Some tender tuberous-rooted climbers that are perennial in the South have been included, but, except where otherwise stated, all vines are hardy and need no protection in winter. It is advisable, in the case of hardy vines which are fibrous-rooted, such as the hop, to divide the roots every four or five years, as these plants become old and make far more annual growth than they can support. Such division will give an opportunity to re-stock the soil with nourishment, which should never be lacking. This can be done in spring or fall. The usual method is to lift the entire clump, cut it into four equal parts with a good, sharp spade, and plant one part in the place where the old plant was. Use the other three elsewhere or throw them away.

This class of vines is not to be despised, as there are some grand climbers in it. Most of them are second only to annual vines in the amount of flowers produced. Why it is I do not know, but most people usually think of perennial

vines as something to stick in the odd corners, where no one ever goes, and, barring the sticking of them in the ground, they receive no attention. Under such treatment they cannot be expected to do well. Give them a square chance. Let them have half-decent cultivation, a fairly good soil, and an abundance of water during summer, and few vines will outclass them.

Perhaps the best of these hardy perennial vines for flowers is the perennial pea (Lathyrus). If given half as good an opportunity as the annual sweet pea, it will out-flower it and produce flowers of a better size with less trouble; but you cannot get the wide range of colours that you have in the annual variety. Perennial peas should have sunshine, and, as they climb by tendrils, they should have a suitable support. Poultry wire is excellent. One important essential is an abundance of water during the growing season.

The best of the perennial peas for screen purposes, as it runs up eight feet and is very free-flowering, is *L. latifolius*. This produces long spikes, of from five to seven flowers, of a rich, rose colour and is a valuable all-round plant. It will do best in sunshine, but moderately well in the shade. This cannot be said of the annual

sweet pea, as it is worthless in shady locations. There is also a pure white variety (*L. latifolius* var. *alba*), and a good purple variety (*L. latifolius* var. *splendens*).

A good pea for poor soil, or for growing in the shade, is the two-flowered pea (*L. grandiflorus*). This attains a height of four feet and is a very free bloomer. The flowers are rose and purple. There is also a pea that can be grown right on the bank of salty marshes and other places adjacent to salt water, which other plants so much dislike. This is Lord Anson's pea (*L. Magellanicus*), a variety worthy of far more attention. The flowers are blue and the plant will attain a height of five feet. There is a white variety, *L. Magellanicus* var. *albus*.

For damp or wet locations the best of all flowering vines is the marsh pea (*L. palustris*). This plant is invaluable in places where it is impossible to get other plants to grow, because of stagnant water. The purple flowers are small, about one half inch across, but are freely produced. In poor, gravelly soil, or in places between rocks where a plant has little to subsist on, the seaside pea (*L. maritimus*) will give satisfaction. This is a low grower, seldom reaching more than two feet, and is more of a trailer than a climber.

The flowers, which are purple, are produced continuously throughout the summer.

There are also several varieties of perennial peas which are devoid of tendrils and are useful in rock gardens and other situations where a sprawly, trailing growth is desirable. The best of them are the spring bitter vetch (*L. vernus*), which has violet flowers in spikes of five or six, and (for shade) the black bitter vetch (*L. niger*), with small purple flowers. The leaves of the latter turn black when drying, hence its common name.

Some of the members of the wonderful clematis family are herbaceous in habit and quite as free-flowering as the erect, woody type. Being rather dwarf and perfectly hardy, they require very little attention and should be planted more than they are. A grand vine for brightening the rock gardens in early spring is (*Clematis alpina*). Its little blue flowers are produced in great numbers, and the plant, if given a support, will climb five feet or even more.

Closely following this variety is *C. verticillaris*, with its large, blue flowers, which, being solitary, give it a bold, independent appearance. It flowers in May and bears blossoms four inches across. Where conditions are favourable, it

will attain a height of ten feet. For tall screens (although best when trained to a solitary pole or pillar), *C. aromatica* may be used. This attains sixteen feet and has reddish-violet and white flowers, about two inches across, during July.

For quick screen growth few climbers can surpass the Madeira vine, or climbing mignonette (*Boussingaultia baselloides*), with its long spikes of whitish, very fragrant flowers, which turn almost black before dying. This vine is a rapid grower, quickly attaining a height of twenty feet. It is tuberous-rooted, and, as the tubers are tender, they must be lifted in fall, stored for the winter, and planted out again the following May. The flowers, which do resemble spikes of mignonette, are freely produced in late summer and fall. Another good point in favour of the Madeira vine is its adaptability to dry situations.

Few vines will out-flower the extraordinary ipomœa family. Ipomœas are perhaps the finest blooming of all plants, as they are continually in flower from summer until cut down by frost. Where a tall vine is wanted for flowers, rather than for very heavy foliage, *Ipomœa digitata*, with its thousands of pinkish-purple blossoms, is admirable. This plant attains a height of thirty feet, but is very tender-rooted. It must

be lifted before frost and stored for the winter — a dry cellar is a good place — and it must not be planted out before May 20.

A curious variety that is directly opposite, in general habits, to the rest of the ipomœas is the noon-flower (*I. linnata*). It opens its flowers only for a few hours at mid-day, whereas most of this family, while requiring the sunlight, usually close their flowers when the sun is strongest. The flowers of this plant are white with a purple centre, and, the roots being tender, they must be lifted in fall. Another very tender member of the family, which can be treated as an herbaceous plant by lifting the tubers in fall and storing them for the winter, is the tree ipomœa (*I. fistulosa*). This variety will run up ten feet and become literally covered with pinkish-purple flowers.

For those who do not care to burden themselves with lifting tubers and planting them out again in spring, I would recommend the man-of-the-earth (*I. pandurata*), a hardy variety which has immense tubers that cause the plant to be thus named. The flowers are pretty, white, with a purple throat, while the plant is in bloom all summer. Its kitchen garden relative, the sweet potato (*I. batatas*), is grown for its edible tubers less than it should be in the North. Just a word as

to its culture: try to give it too much manure, and you will obtain some of the finest tubers you ever laid eyes on. That is all this plant requires to be grown well—manure and plenty of it.

Though grossly neglected, one of the best herbaceous climbers, and a vine that can be used for screens, hedges, and any place where a dense foliage is required, is the hop (*Humulus lupulus*) This is a splendid screen plant. Being a twiner, it clings well and attains a height of thirty feet. The flowers are produced in panicles similar to those of the annual hop, but after the flowers are gone the plant is still attractive, with its curious little papery, straw-coloured vessels which are the hops of commerce.

When grown commercially on a large scale, hops are trained on poles, the same as Lima beans. But instead of about an inch of the side branches being left on the poles they are removed altogether, the poles being left perfectly smooth. The plants are trained to these poles, and, when the crop is ready to be harvested, are cut at the ground and the pole pulled up. It is then an easy matter to pull the pole away, leaving the vines to be thrown into a wagon and carted off.

A yellow variety of hop which fits in wherever this colour is wanted is the yellow-leaved

hop (*H. lupulus* var. *aureus*). Personally I do not like a large, yellow leaf. If the leaf were small, like that of the honeysuckle, I could care for it; but a large, yellow leaf always reminds me of a sick plant. The hops are very hardy and do not require lifting in the fall. They can be left undisturbed and will survive for years.

For all kinds of light work, but not for a screen (as the foliage is too small and sparing), the cinnamon vine (*Dioscorea divaricata*) is very useful. The foliage of this plant is varied, being an odd mixture of green, red, and pale yellow, and is very attractive. The plant will attain a height of thirty feet, but as it is a thin, sparse grower, don't let its height make too much of an impression. It bears small clusters of white flowers, which are cinnamon scented. It is tuberous-rooted and hardy in the latitude of New York and central Connecticut. A species that is sometimes grown as a curiosity, is the air potato (*D. bulbifera*). This plant produces along the growing stem tubers which sometimes weigh as much as three pounds. They are edible and of a potato-like flavour. The vine climbs as high as twenty feet, but has little to recommend it outside of its oddity.

A pretty little vine for fences and screens is

the ground-nut (*Apios tuberosa*), but it must be restricted as to root space or it will become weedy. This, too, is an oddity, as it is the only climber, except the akebia, that has flowers of a brownish colour. Although small, the fragrant blooms are freely produced. This vine would look well in a rockery, but must not be used in mixed plantings, as it runs rampant and will smother out choice plants. Give it a good, sunny location and plenty of water and it will attain a height of eight to ten feet. The tubers are hardy in this latitude (Long Island) and are edible.

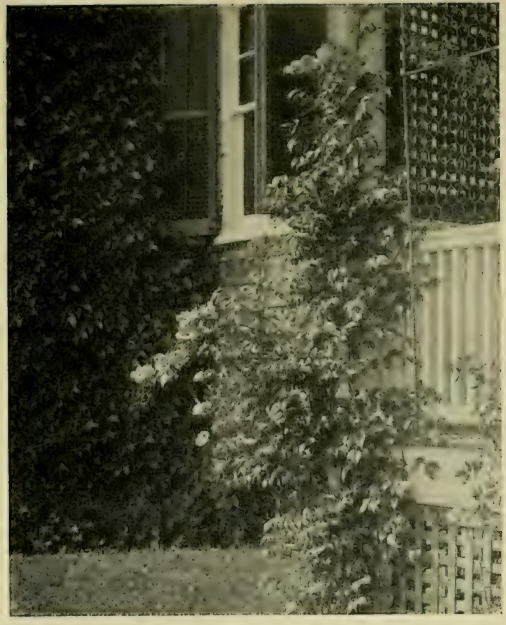
In Europe, a popular foliage plant for covering old hedges and screens, but seldom seen in this country, is the bryony (*Bryonia dioica*). It has little to induce its being used except quick growth. It blooms, but the flowers are insignificant, being greenish-white. The plant, though hardy in England, requires a little mulching in this climate.

It is not easy to find plants that will do well in sandy places. Such plants should have great drought-resisting qualities and these are seldom met with. But there is one species of vines which will do well in sandy, waste places and flower continually through the summer. That is the convolvulus family. The best member is the California rose (*C. Japonicus*), which, climbing

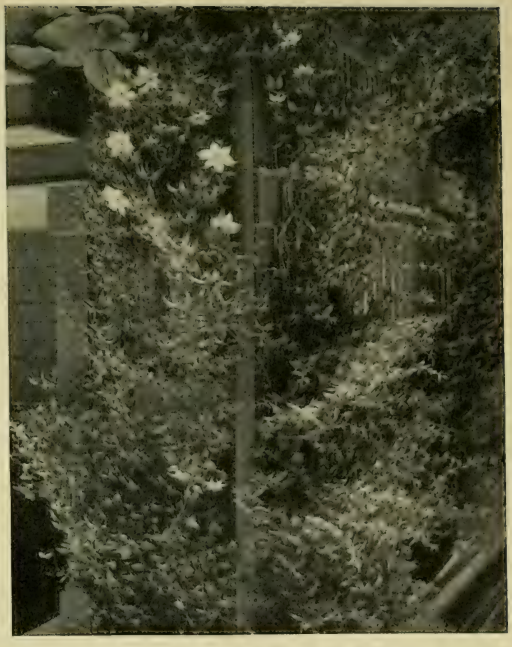
as high as twenty feet, bears single pink flowers all summer. It needs protection with a good, heavy winter mulch in north temperate latitudes. There is also a double variety, equally as good in other particulars. For covering sand banks and steep grades with poor, gravelly soil, the best plant is *C. villosa*, a pretty little trailer with creamy-yellow flowers, all summer.

Other bindweeds, which can be used as bank covers, make good rockery plants, and which do better in dry soils, are the Rutland Beauty (*C. sepium*), with variable flowers of white and rose colour, and *C. occidentalis*. The latter is a white and pink variety, a little more upright than the former, which is a real trailer.

A plant which cannot be used for the general purpose to which vines are generally applied, but which is good for covering fences and other objects where a heavy screen is not desired, is the butterfly pea (*Centrosema Virginianum*), a small, thin-leaved vine, with clusters of violet-coloured flowers produced all summer. It is also a good plant for sandy soils. It would be more planted if it were better known, as the small clusters of pea-like flowers are always attractive. There is a white-flowered variety, which is even more rare than the blue type.



The trumpet creeper (Tecoma) is excellent for cutting as well as on the piazza



Large flowered clematis brings a burst of blossom in the hot weather. (*Clematis Henryi*)

TWO VINES THAT BLOOM IN SUMMER

What little pruning is necessary is done between November and April

By judicious planting this effect may be had for the other eight months

THE PERGOLA IN WINTER AND SUMMER

The small clover-like foliage of the bird-foot trefoil (*Lotus corniculatus*), makes it invaluable as a trailer and especially so when we consider that it will withstand shade. It is particularly adapted for clothing steep banks, where its little yellow and reddish flowers are attractive. There is a double variety, but the single is rather more to my taste.

CHAPTER X

Spring-flowering Hardy Vines

The unrivalled wistaria — Earliest spring flowers — Forsythia as a vine — The easily-grown akebia — Clematis species you should know.

Since in this connection it is necessary to place a definite, although arbitrary, limitation on the seasons, I make June the dividing date, and will therefore call vines that flower, or begin to flower before June 1, "spring-flowering." But we will consider only those early-flowering species that are valuable *because of their flower-effects*. Other vines, such as Dutchman's Pipe, which, although they blossom thus early, are more esteemed for their foliage, are discussed in another chapter. In other words, we will now confine ourselves to vines that bear conspicuous, effective flowers before June 1.

On such plants the blooms are, as a rule, produced from buds formed the previous season; but a few vines make in the spring a new, short growth which terminates in a flower spike. All those that flower from the previous season's buds lend

themselves to the forcing of cut branches. Take a branch or twig at any time during winter, place it in water in a warm temperature, and in from ten to thirty days, according to the kind of plant and the time of year, it will be a mass of bloom. The later in the season it is cut, the less time it will take to bring it into flower.

What this group lacks in numbers, its prize members make up in rich, regal magnificence. Here we find what is undoubtedly the most beautiful, the most valuable, and the most popular of woody vines, the wistaria. The one common species (*W. Chinensis*), is so far ahead of its brothers that, while it remained, even though all others were obliterated, our gardens would not suffer appreciably. It has in its makeup practically everything that the plant-lover asks, and its beautiful racemes of mauve, pea-like flowers are assuredly the most welcome in the spring. They greet us at a time when the earth is just beginning to become gay once more, and they herald their appearance with a burst of delicate fragrance. This is essentially the vine for the amateur, for it can be handled with impunity, and, in fact, dislikes "nursing." It will even give satisfaction as a seashore plant, not seeming to mind extreme changes of weather.

If a wistaria has been growing undisturbed for a few years, you will find that it has a large percentage of long, thin, wiry shoots. These do not produce flowers, and should be removed at any time of the year. The short, stumpy spurs are the kind that flower, and to produce these, the plants should be pruned back to within two or three eyes of the flowers immediately after they fall. The aim always should be to keep one good shoot coming on each season; to provide room for it, cut one of the oldest shoots out entirely. If you desire the plant to attain a great height, keep one of these shoots growing until it has reached the height desired, when it can be spurred in to produce flowers. "Spurring" is clipping off the top and cutting the laterals close to the main stem.

When planting wistaria, provide a soil trenched not less than three feet deep and well enriched, for this vine makes but a few roots, which force themselves well down into the earth. Full sunshine is not an absolute essential, but plenty of light is necessary for good flowers, and of sunshine there must be enough to ripen the wood thoroughly. Always avoid cold spots where very early or late frosts strike, because the buds start to swell very early in spring, and perchance

a late frost will sacrifice a season's flowers. A plant with a northern exposure may be protected by cheese cloth or sheets. Transplanting can be done, but it is better to select a permanent position, and, after planting, leave the vine alone. In a case of necessity, cut the plant well back, removing about one third of the top; then dig well down for the deep root. Go down as far as you possibly can, and if you have to cut the root (you usually have to, finding only a single big one) cut it off clean, and in replanting, place a little sharp sand around the wound to assist in the development of new growth.

The Chinese wistaria flowers about the middle of May and sometimes, in a favourable season, produces a second crop in August. The height this plant will attain is rather uncertain, but I think one hundred feet a very low estimate. The best white-flowered wistaria is *Wistaria Chinensis*, var. *alba*, identical with the type in every respect, save the colour of the flowers. There are two good double forms, var. *flore-pleno* (blue), and var. *alba plena* (white). These are equally hardy and just as floriferous as the single forms. There is also a variety with variegated foliage (var. *variegata*), but it is not a satisfactory grower and is very little used.

In *W. multijuga*, the pale mauve racemes are from three to four feet in length, but I cannot say that this species is as satisfactory as the Chinese type. It is pretty when in flower, and if all the florets on the immense raceme opened at one time, it would be a grand sight. However, they do not, and by the time the florets on the lower portion or tip are open, the upper, basal ones are unsightly. The plant is useful in effecting a succession, as it flowers about two weeks later than the Chinese form. There is also a white-flowered variety.

EARLIEST SPRING FLOWERS

The first flower in early spring, from any hardy tree or shrub, is that of the yellow jasmine (*Jasminum nudiflorum*). Although the jasmines were introduced from the warmer climate of Asia, they are easily grown in American gardens requiring but little protection; in the latitude of New York, they may be termed hardy. I have grown *Jasminum nudiflorum* on the south shore of Long Island, fully exposed to winds, for six years without any winter protection, and it has never been killed or injured in even a trifling way. The jasmines are real twiners and revolve in a course opposite to that of the sun, but the

twining is so slight as to be of no practical value in the support of the plant, and, if used as climbers, they must be assisted in some way. Fortunately, the long, thin shoots can be tied or trained into almost any position with no fear of their being broken. The plant is also remarkably free from attacks of insects or disease.

In pruning, all that is necessary is to remove any dead or very old wood immediately after the flowers fall in the spring. In the matter of soil, jasmines are not hard to please. Any good garden soil will answer, although if rather light and not too rich the plants will winter much better. Under these conditions, they will not make as much growth, it is true, but therein lies the secret of the more successful wintering. By making a short, stocky growth, the plants are able to thoroughly ripen the current season's wood before winter sets in. It is a well-known fact that tender plants will winter better in a poor than in a rich soil. The American holly (*Ilex opaca*), for example, is very liable to severe winter-killing when planted in a rich soil. On the other hand, I have seen it growing on Fire Island Beach (which is nothing but an immense sand bar) right in full sunlight, with absolutely no protection or wind-break near. The specimens

have never winter-killed and some of them are twenty-five feet high.

The hardy yellow form (*J. nudiflorum*) is covered with little flowers in very early spring, often in March. It delights in, and north of Washington requires, a sunny location, well protected on all sides by other shrubs or trees, and under favourable conditions will attain a height of fifteen feet. A stock of young plants may be worked up very easily. Merely lay a shoot along the ground, placing a brick or other weight on it to keep it in contact with the earth. It will quickly throw out roots and, as soon as these are well established, the new growths may be severed from the old plant.

A large-flowering type of recent introduction is *J. primulium*, with yellow flowers much larger than those of the better known species. It is claimed to be equally as hardy, and if so, will soon become a favourite in our gardens. Jasmines can be transplanted in spring or fall, but spring, when they are in bloom, is the better season. The opening of the flowers does not indicate that root action has started; it is really the fruit of the previous season's work brought into life by the increasing warmth of the season.

The forsythia, or golden bell, has become so

popular that it is a very real feature of our early spring gardens. April sees it as a shower of yellow wherever any planting has been done. It is free-growing, never troubled with insects or disease of any kind, and, although it thrives best in a good, deep loam, it will grow moderately well in an ordinary soil that supports any vegetation at all. It should have a good, sunny location, but the east or west side of a building or pergola will answer. The plant must be assisted to climb, but, if treated moderately well, *F. suspensa* will attain a height of from fifteen to twenty feet; it is an excellent plant for porch and portico.

The pruning needed by forsythia, grown as a vine, differs considerably from the method employed on it as a shrub. In the latter case, it is the common practice to remove two or three of the oldest shoots and leave for flowers the young wood that is coming on; this gives vigorous young wood from year to year, but allows the plant itself to make no headway. To develop a vine, it is necessary to proceed differently, cutting out all dead wood and removing about twenty per cent. of the very thin, top branches; then cut back far enough on the previous season's growth to insure a good break. This pruning must be done immediately after the flowers fade.

Never do any tipping before the flowers open: it is unnecessary, and, moreover, reduces the number of blossoms.

This plant is best moved when it is in flower, while young plants can be raised by laying down a shoot in the manner just recommended in connection with the yellow jasmine. Fortune's golden bell (*Forsythia suspensa*, var. *fortunei*) is a little more vigorous in growth than the type and may be used as a vine, but for climbing purposes my preference is for the more slender form.

I have never been able to understand why *Akebia quinata* is not more popular. It is one of the very hardiest of garden plants, requiring no protection whatever, and will climb a support of any kind adapted to twining vines. The vine is one of the best as to foliage, the five-pointed, rich green leaves make rolling masses of colour, dense but not heavy. The flowers of the akebia, freely produced during the first part of May, are peculiar. The pistillate and staminate flowers are borne in the same cluster, but are differently coloured. The pistillate flowers are dull, brownish-purple, and the staminate flowers, light purple. Both are delicately scented.

The akebia requires very little pruning. It is

not a rank grower and therefore does not require radical treatment; but it is not advisable to neglect pruning altogether, because the plant has a tendency to throw its strength to the top, and a specimen left to itself will surely become bare at the bottom. The necessary attention, however, is merely the removal of all very weak shoots and a *slight* cutting back to induce a good break. This work must be done immediately after the plant has flowered.

The vine delights in a rather light soil and a moderately light location, but hardly full sunshine. My experience is that it does best in semi-shade, often attaining there a height of thirty feet. It is remarkably free from disease and insect attacks, and is quite at home on seashore fronts. It transplants easily in either spring or fall, and young plants can be raised in the same manner as jasmines, by layering. In Japan, the akebia serves many purposes. The shoots, because of their flexibility, are used in the manufacture of baskets and similar articles, while the fruit is eaten. In America the fruit is rarely produced.

There are two spring-flowering members of the clematis family that somehow appear to be overlooked in the face of the greater popularity

of the larger-flowered summer bloomers. One has white flowers, the other blue. The mere fact that they can be had in flower before June, is sufficient justification for their addition to our popular hardy vines for trellis or pergola. Although the individual flowers are smaller, these two species, flowering profusely, make a brave show of bloom.

The white-flowered species (*C. montana*) is the best for garden effect. Its pure white flowers are borne in great profusion the first week in May, and are the early analogues of those of the ubiquitous Japan clematis of August. A little winter protection is necessary near New York, but with the best shelter it may be relied upon to attain a height of twenty feet. As it branches freely, it will quickly cover a large trellis, when once it is established. The pale-blue flowers of *C. cærulea* appear two or three weeks later. This is a dwarf vine, the maximum height being about ten feet. The plant is of interest, however, in being one of the parents of the hybrid varieties of clematis grown by florists for winter forcing.

Clematis can be transplanted, but should not be disturbed unless absolutely necessary, as it takes some time in getting reëstablished. When planting, be very careful to give the

roots abundant space and don't plant it near anything that will interfere with them. Of all vines, the clematis is most fastidious as to soil. Indeed, I may say that there is no class of plants so hard to please in this matter. The ideal soil is one that is naturally light and that has been well trenched and thoroughly enriched with manure. A heavy, clayey soil will not grow clematis, unless it has been thoroughly worked up, and, if very stiff, had added to it a little sharp sand, together with some lime. Some old house plaster, in the bottom of the trench, serves a double purpose in keeping the soil sweet and supplying drainage. The plants are not very robust growers and are rather subject to disease, but I think nine tenths of the trouble comes from the roots. Give them a light but rich soil, keep them watered during the growing season (not when they are in flower), and a great deal of the trouble experienced with these beautiful plants will be overcome.

I have seen specimens do well along the coast, but clematis cannot be called a seashore vine. Those observed have usually been well protected by heavy mass plantings. The spring-flowering clematis requires very little pruning, as it flowers from wood formed the previous season; any atten-

tion should be given immediately after it has flowered. It is advisable, however, to remove all very weak shoots and cut back far enough on the good wood to induce several fine, strong shoots, which will be the flowering wood the following spring.

Though it is a natural climber, clematis has to be assisted somewhat on account of the weakness of its shoots. It climbs mainly by means of its petioles or leaf stalks. The stems, it is true, twine to some degree, but the chief work of support is upon the leaf stalks, the only purpose of the stem twist being to bring the petioles into proper position.

CHAPTER XI

Summer-Flowering Hardy Vines

The honeysuckles — The common trumpet creeper — The Chinese trumpet creeper — Small-flowering clematis — Large-flowering clematis — Clematis flowering on mature wood — Jasmine — The actinidias — The American wistaria — Climbing hydrangea — The polygonums.

Spring-flowering vines are a luxury, so to speak; summer-flowering ones are necessities. Why? For the simple reason that they flower in summer, a time when the greater percentage of the population is in the country to enjoy the beauties of nature. Certainly nature has provided herself with a host of beautiful vines to lighten her task of pleasing mankind.

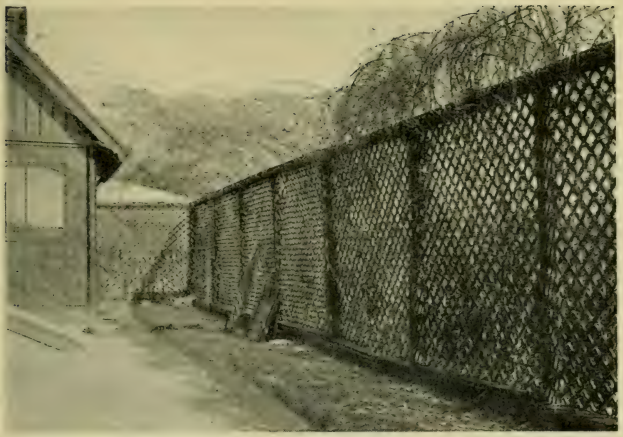
There is one important point in the growing of summer-flowering vines that must not be lost sight of. With few exceptions, these vines flower on the current season's growth, and if there is dry weather during the growing season previous to flowering, they should be freely watered at the roots.

In their beauty and freedom of bloom, their

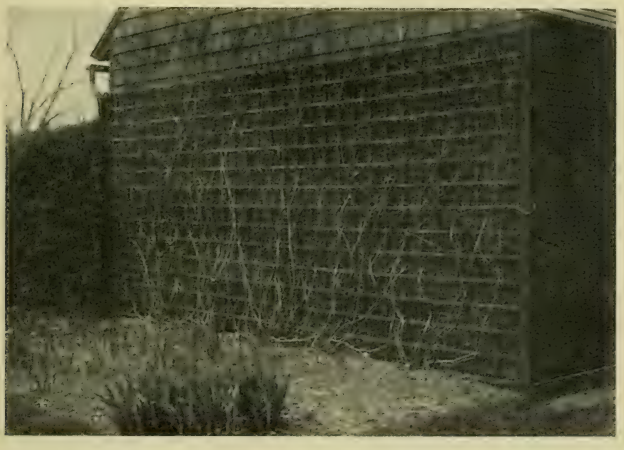
extreme hardiness and their adaptability to dry and impoverished soils, the honeysuckles are the most useful of all our summer-flowering vines. They can stand more abuse and neglect than any I know of. Don't neglect them, however, as they are quick to repay any attention bestowed on them.

The honeysuckles twine and will ascend any suitable support. They are all good growers, are never troubled with insects or disease, excepting under very unfavourable conditions, and once established they are there to stay. They are not tall growers, twenty-five feet being the extreme limit. Although they delight in sunshine, they will do quite well in a moderate shade, and will grow and flower in locations so dry that in them other plants would perish. Honeysuckles flower on new wood; not, however, on the terminal growths. Cut back severely to produce great, long shoots of beautiful, scented flowers; but for effect as a vine prune lightly. In both cases, the right time is early spring. Honeysuckles can be transplanted either spring or fall, and young plants can be raised in any quantity by layering.

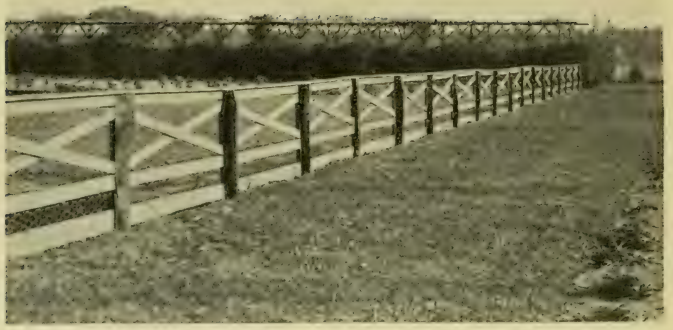
For mixing in with green-leaved vines, for screens to break up a heavy effect, or for planting



Climbing roses, before being pruned. Many vines will thrive on this sort of trellis



The space between lattice and wall renders this trellis especially good for twining vines



How can you justify or permit, on your place, a fence like this, when —

Honeysuckle could transform it into this? From the inside, privacy; from the outside, beauty

separately where good yellow colour is desired, the best vine is the golden Japan honeysuckle (*Lonicera Japonica* var. *reticulata*). Beside being a grand foliage plant, it has very attractive flowers. They fade from yellow to white. A form of this plant which is a grand ground cover — but not among shrubs, as it will climb them — is the dwarf golden Japan honeysuckle (*L. Japonica* var. *flexuosa*). This plant has a bad habit of rooting too readily when a shoot touches the ground. In this manner it travels all over and in some cases becomes a nuisance.

For covering old stumps and bowlders, the Belgian honeysuckle (*L. Periclymenum Belgica*) will please the most critical; it is a dwarf grower, becoming somewhat bushy, and its long, drooping spikes of fragrant, red flowers, which are borne in profusion all summer, add colour to any situation. For a situation that demands winter foliage as a screen, and where flowers would lend attractiveness to the spot in summer, the vine that stands out most prominently is the evergreen honeysuckle (*L. Japonica Halliana*). The small, dark-green foliage of this vine would warrant its use even if it never flowered; but it does. Fall finds it with long, drooping spikes of pale-yellow and white flowers, and their perfume

is particularly esteemed at that season of the year when fragrant flowers are scarce. There is another evergreen type, the Chinese honeysuckle (*L. Chinensis*), but most people prefer the former. For a conspicuous lamp post, or a much frequented summer house, use Heckrott's ever-blooming honeysuckle (*L. Heckrotti*). This plant is covered the entire summer with clusters of fragrant, reddish flowers, and will furnish beauty for the improvement of any prominent situation.

The honeysuckle that grows to the greatest height of all is the native American type (*L. hirsuta*). It has little else to recommend it, however, and certainly does not compare favourably with its Japanese brothers. A good dwarf variety that does not make itself obnoxious by continual suckering is the trumpet honeysuckle (*L. sempervirens*). This plant is covered all summer with orange-red flowers, but lacks fragrance. The best honeysuckle for shady spots is the woodbine (*L. Periclymenum*), a good, free bloomer. The flowers are yellowish-white and very fragrant. The only pure white honeysuckle is *L. longiflorum*, which is tender and needs protection in the latitude of Long Island. There are numerous other varieties, but they vary

little from those already given, and are not as popular.

If you want a natural climber to cover the side of a stone or brick building, lamp post or dead tree, where it is freely exposed to the sun, there is nothing to surpass the trumpet creeper. Its gorgeous masses of glowing red flowers — produced during the very hottest period of the year, a time when flowers are scarce — give a wonderfully brilliant effect. Its foliage is also a striking feature. In situations where it has plenty of light, the foliage is produced in light, feathery sprays right down to the ground. Without the sun, however, it will become bare at the bottom, as it throws all its strength toward the sunlight.

The flower of the trumpet creeper is valuable for cutting. As it flowers in clusters on the terminal growth of the current season, it should be pruned hard in early spring. Another point is training; the vine is very apt to become bare at the base, in which case bend a shoot down to the base of the plant. With good, rich soil and a southern exposure, the trumpet creeper will climb to a height of forty feet. It climbs by rootlets; therefore it is very little trouble. It can be transplanted both spring or fall, but the former is the better time. Young plants can be raised by layering.

There are two tall-growing forms of the old trumpet creeper, namely, *Tecoma radicans*, with orange-scarlet flowers, tubular in shape and about one inch across at the outside of the trumpet; and *T. radicans* var. *atropurpurea*, identical except in colour, being deeper than that of the other variety. There is also a bush, or standard kind that is excellent for a conspicuous place on the lawn. This is the dwarf trumpet creeper (*T. radicane* var. *speciosa*).

Although these varieties are all good, old standbys, they are not in the same class as the Chinese type of trumpet creeper, of which the flowers are much superior. The trumpet expands more, showing the inner colour of the flower better, and more flowers are open at one time on the spike. Otherwise, the plant is the same as the older type and should have similar treatment. There are two types of the Chinese trumpet creeper. The best coloured is *T. grandiflora* var. *atrosanguinea* with flowers a very deep shade of scarlet. Though not so good a colour, *T. grandiflora* is also valuable.

For a prominent lawn specimen, or where a grand display of flowers is more important than a foliage screen, nothing surpasses the clematis in beauty and individuality. Unfortunately, the

clematis is a rather unsatisfactory grower. This fault can be overcome, to a certain extent, by giving the vines that which they demand. Don't expect clematis to grow like wistaria, however. Its thin, frail growth is part of its make-up, and, although when thoroughly established it flowers with wonderful freedom, it is never a rank, heavy grower. In no case should it be used as a screen, as it lacks foliage. It is, in short, to the garden what the orchid is to the greenhouse.

The clematis should have a good, light location, and should be protected from heavy winds, as it is a frail climber and easily torn from its supports. It clings to almost any kind of an open-work trellis, but on poultry wire is perfectly at home. The soil must be properly prepared as directed for the spring-flowering kinds. A yearly application of manure is advisable. Water freely when in growth. Although clematis can be transplanted spring or fall, spring is the better time. But do not move it unless absolutely necessary, as it is slow to reëstablish itself.

SMALL-FLOWERING CLEMATIS

The best known and most easily grown clematis of all, and the only one that will flower in semi-shade, is the Japanese clematis (*C. paniculata*).

This is one of the showiest of vines. The pure white flowers, an inch or so across, come late in August, when the vine becomes one mass of bloom. Nor is this vine to be despised for later effect, as the seed pods are very attractive early in September. It requires good, hard pruning; cut back at least one third of the previous season's growth in early spring and remove all very weak shoots. This variety will attain a height of twenty feet.

A similar variety, but one that must have the full sunlight, is *C. Flammula.* In this, also, the white flowers are followed by plumy seed pods. A more vigorous grower than either is the "traveller's joy," or "old man's beard" (*C. Vitalba*), but the white flowers are smaller and less showy. It blooms in July and the succeeding feathery plumes are very conspicuous. With full sunshine, and in good soil, it will run up thirty feet.

A valuable variety for using in rockeries, or where any attempt at a rough, natural effect is made, but where there is plenty of sun, is the wild clematis (*C. Virginiana*). This is another small-flowering, white variety. It will attain a height of fifteen feet, but seems to be more at home scrambling over stumps and low hedges. The small-flowering type is cultivated more exten-

sively than the large-flowering type, because it is surer and not so discriminating in its demands. The varieties will all stand a moderate pruning in early spring.

LARGE-FLOWERING CLEMATIS

For real splendour and showiness, the enormous masses of bloom of the large-flowering clematis are certainly unapproached by any flowering vine. Unfortunately, even more than the small-flowering type, it lacks two important essentials — a vigorous habit and free bloom; but a plant once established and doing well, will out-flower any other vine. The group is therefore worthy of a trial, even if one meets with failure.

For a deep-violet effect, where a big burst of that colour is desired in midsummer, *C. Jackmani* is unique. It has flowers six or seven inches across, and how this plant charges the whole landscape when in full bloom can be realized only by beholding the gorgeous sight. Another good variety of the same colour is *C. Devoniensis*.

A variety that has stood the test of time and can be relied upon where white is wanted is *C. Henryi*, which has very large flowers and is a free bloomer. Other white varieties, but not nearly so good, are Mrs. C. Jackman and *C. lanuginosa*

var. *candida*. The only really good crimson variety, and a rather shy one at that, is Madame Edouard André. The best pink variety is Madame Baron Veillard.

THE VITICELLA TYPE OF CLEMATIS

A type of clematis I would recommend to the amateur, because of its hardiness and free-blooming character, and because when killed to the ground it will spring up and bloom again, is *C. Viticella*. Although the flowers are not as large as in the type just mentioned, the type makes just as good a display from a distance, and only when the individuality of the flowers is considered is it inferior to the largest-flowering type. This clematis has flowers about two inches across. The type is blue, but there are numerous hybrid varieties to be had in all colours. A fine light blue is var. *lilicina-floribunda*. The best deep blue is Lady Bovill, and the best purple is Othéllo.

The best clematis flowering on new wood is Madame Grange, violet. Star of India is the best purple, and *C. Viticella* var. *venosa* the finest reddish-purple. All the varieties listed to date, flower on new wood and should be pruned in early spring; but don't cut a double clematis as you would a maple tree. They are slow

growers, and all the pruning that is necessary is the removal of any very poor shoots and of about one quarter of the previous season's growth in early spring. This will give several good, strong shoots for flowering from each shoot cut.

CLEMATIS THAT FLOWERS ON RIPENED WOOD

The varieties mentioned below flower on mature wood and should be pruned lightly. After flowering, remove all very thin, weak shoots; that is all that will be necessary. The best and most popular of the double-flowered sort is Duchess of Edinburgh. This is a good, free grower and the double white flowers are produced with great freedom in midsummer; another good double white is Snowdrift. A good double blue is Countess of Lovelace, and Louis van Houtte is a nice shade of rosy white. Among the singles, the best are *C. cærulea* var. *Standishi*, a good, light, purple; Miss Bateman, a good, pure white; *C. florida*, white, barred with purple; and *C. florida* var. *bicolor*, a variety with purple predominating.

I would not advise any one to grow those listed here as flowering on old wood, as a good, heavy freezing causes the loss of one season's flowers. Duchess of Edinburgh is very hardy

and worth a trial; the others are not, excepting to the lover of variety.

OTHER VINES

For a piazza vine, in abundant sunlight, you cannot find one more attractive than the white jasmine (*Jasminum officinale*). It blooms all summer and its fragrance is delightful, especially on a still evening, when its sweetness will penetrate to the innermost rooms of the house. Like all other plants of exceptional beauty, it requires a little extra attention. The plant is a twiner, but must be assisted, and if sprayed occasionally during the summer it will grow much better. In a good, hot, sunny location it will climb to a height of twenty feet.

The nurserymen have frightened people away from growing the white jasmine, as they fix the latitude of Philadelphia as its northern limit. Even our nurserymen have hallucinations. The plant can be grown in the latitude of New York, if the directions for protecting tender vines given in the chapter on winter-killing are carefully followed.

For a combination of foliage and flowers, and also for making a heavy screen, which is there to stay when the vine is established, the actinidias

are excellent. Their small, green foliage is particularly attractive from a distance when the sun is shining on it. The actinidias are remarkably free from the attacks of insects, excepting the San José scale. This pest is rather partial to them, and the plants should be looked over occasionally and steps taken to check the scale if any be discovered.

Actinidias delight in a sunny location. They are good growers, twining close to their support. They should be pruned in early spring. Don't prune severely for the first two seasons after planting; rather let the plant become thoroughly established. After that, however, cut back at least one third of the previous season's growth to produce flowers. Spring is the best time to transplant them, but it can be done in fall.

In Japan, the berries of the actinidias are eaten. In fact, with their fig-like flavour, they are considered a delicacy. In our climate the vines very seldom produce fruit.

Because of its robust growth and dark-green foliage, the best vine of this family is *A. arguta*. The flowers of this plant are creamy white, with black anthers, and are produced in small, drooping clusters. The foliage is always attractive. Under good conditions this plant will attain a

height of seventy-five feet. The only reason that *A. polygama* is grown is because it flowers in early July, a time when flowering vines are scarce. The foliage of this plant is not so good a colour as that of the former variety, being a light green, and the plant attains a height of only thirty feet. Another variety, which is not very popular, is *A. Kolomikta*. This is similar to *A. polygama*, but a much sparser grower.

THE AMERICAN WISTARIA

Although smaller, the flowers of the American wistaria (*W. speciosa*) are much more beautiful than those of either the Chinese or Japanese types. They appear toward the end of June, and the wings of each of the small pea-like florets expand until they meet those of the next floret, forming a pyramid of light blue, accentuated by the deeper blue colour of the standards. The flowers are followed by long seed pods, very much like those of the smoke bean. This is a beautiful vine and far too little known. There is a beautiful white variety, flowering at the same time (*W. speciosa* var. *alba*), but the best of the species is *W. speciosa* var. *magnifica*. The flower is peculiar, being lilac, with a yellow centre. It delights in the sunshine, even more than the spring-flowering

wistaria. It flowers about the middle of June and should be pruned in early spring. Remove all very weak, thin shoots; otherwise the culture should be the same as for the spring-flowering wistaria.

On places where there is but a small strip of lawn between the house and highway, it is not infrequently a hard matter to find something to break up the monotony of the stretch of plain, green grass. It is too small a space for a flower bed, and just the place where a specimen shrub or tree looks stiff. The plant for such a location is the short-clustered wistaria (*W. brachybotrys*). This is very dwarf, six feet being the limit, but, grown in a good, sunny location, as a headed-in standard, it cannot be beaten. The flowers are light purple and are freely borne about the middle of July. There is also a white type (var. *alba*), and a beautiful red one (var. *rubra*).

The climbing hydrangea (*H. petiolaris*) is a slow vine to establish itself, but, once worked up to the flowering stage, there are few vines to approach it. Its masses of small, white flowers cause it slightly to resemble the clematis, but it is the better of the two for some purposes, as it is a natural rootlet climber and can be used for stone or brick buildings. It will not cling

to wood. This plant requires a little coddling at the start, as it dislikes moving. For this reason it should not be transplanted except when very necessary. Don't let it bloom for the first two or three seasons. Prune in early spring and remove all the very thin, weak shoots and cut back far enough on good wood to produce fine growth. In case of flowering wood appearing, cut it off. It should have a light, but rather sheltered location, and protection by wrapping in straw or burlap for the first two winters, at least. Under good cultivation it will make a grand specimen, growing to a height of twenty feet.

The unfavourable attitude toward this plant is due to its being confused by dealers with another Japanese climber, *Schizophragma hydrangeoides*, which is sent out under the same common name and which is a mere weed by comparison. It can be distinguished by the foliage, which is deeply lobed, while the leaf of the true plant is entire.

THE POLYGONUMS OR KNOTWEEDS

The immense drooping panicles of beautiful rose-coloured, feathery flowers of *Polygonum Baldschuanicum* make this vine a very desirable

one for low trellises and fences. It quickly establishes itself and will flower freely the second year from planting, but should always have a good, light location, as it is a quick, soft grower and runs up to a height of ten to twelve feet in a single season. It kills to the ground in severe winters, but in sheltered positions, or when protected, will become woody at the base. It should be cut back to live wood in early spring and can be transplanted in spring or fall with impunity.

Another good climbing knotweed for quick effect, flowering the second season from planting, is *P. multiflorum*. It is a heavier grower and the flowers are dispersed all over the plant, appearing from the axils of each leaf and not in a panicle as in the former variety. Also, it flowers one month later, in September. Otherwise the plants are similar and should have the same cultivation.

CHAPTER XII

Evergreen Vines

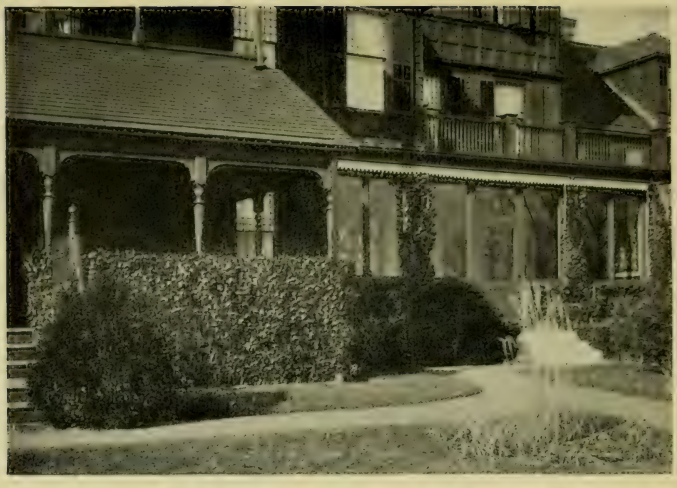
Unappreciated value of the English ivy — The uses of *Euonymus radicans* — Evergreen roses and honeysuckles.

Unfortunately, there are for New York, and places of similar climate, but few really evergreen vines — plants that retain their foliage in a green condition all winter. I do not consider evergreen a plant that merely retains on its branches the dead foliage of the previous season, but one on which there is always a certain amount of green, growing leaf area. Of course, climate is a controlling factor, some of the honeysuckles, for example, becoming nearly evergreen as the southern regions are approached. But these do not satisfy the requirements as I have outlined them above.

There is no better truly evergreen vine than the English ivy (*Hedera Helix*). We do not appreciate this half enough. True, it is not the easiest thing to grow everywhere, but it can be established in hundreds of places where now it

EUONYMUS RADICANS

An evergreen vine that is hardy even where English ivy will not thrive. Useful alike for covering walls, banks, houses and shady spots



An ideal location. Here the leaves remain green and bright, winter and summer

Hedera Helix may be grown for cutting under the benches in a greenhouse at all times

is not known. I have grown it for many years on the north wall of a residence; also on the wall of a greenhouse range, where its solid mass of deep, green foliage lends life to the garden all winter, although the leaves, exposed to drip from the overhanging gutter, do suffer. That is to say, they die by the time spring returns, when we must remove them to make room for the new growth. The old leaves are brushed off with a broom, or may be clipped off with a pair of hedge-shears in April, or as soon as the young growth opens, and in a week or ten days the wall once more presents to view a solid mantle of greenery.

Many people fail in their efforts to grow the English ivy, because they do not have the patience to persist in getting the young shoots established. Although the roots may be hardy, the new growths are likely to winter-kill for the first two or three years; it is, therefore, well to give some protection for, say, three years. This can be done by mulching the ground well and covering the tops so as to exclude the light, but not the air. I do not like the idea of covering vines with straw matting or burlap, but a few pine boughs stuck up in front of them on the south side will do much in the way of helping to establish the plants.

An excellent way to assist a young plant in getting hold, is to strip off all the leaves with a pocket knife, toward spring. This greatly reduces the transpiratory surface, and, therefore, the drain on the plant, and starts it off with renewed vigour.

Generally speaking, the common ivy is one of the most useful vines we have. It is excellent for covering all kinds of supports, fences, and buildings, and it not only covers them, but also adds to such objects a tone and an effect lent by no other vine. Ivy is also used in ornamental bedding, and not infrequently in cemeteries, for covering graves. This latter result is quickly accomplished, and if there be a cross or other monument at the head of the grave, the vine will soon climb over, and cover that also. Only recently I came across a perfect example of this sort of thing, where, in an old-fashioned graveyard a little wooden cross had become a mass of the quiet, glossy, green foliage that so exquisitely chimes in with those, as well as many other surroundings. In training an ivy for such a purpose, the direction of the stem-growth should be determined and maintained by pinning down the shoots with small wooden pegs or wire hairpins.

Ivy climbs to an immense height. It is difficult to find a definite figure stated by any writer, but to say one hundred feet would not I think be overstating its possibilities. In case the plant seems subject to sun scald injury during winter, the removal of the leaves in early spring as described in a previous paragraph, will not only remove any effects of scalding, but will also induce a more compact and more vigorous growth.

There is a multitude of varieties of ivy, of which I shall mention but a few of the best. The common type (*Hedera Helix* proper) has dark-green leaves, somewhat pale underneath. It is a very free grower and will succeed almost anywhere. *H. Helix* var. *Algeriensis* has leaves almost round, and of a much lighter green. The leaves of var. *Cavendishi* are attractively edged with white, and become a brilliant colour in the fall; but the vine is not as rank a grower as the above-mentioned varieties. *H. Helix* var. *Hibernica* has the largest leaves of any of the family; these are also of a unique shape, being often broader than they are long. Any of these varieties can be grown as far north as New York, if given a little protection in winter.

A good evergreen vine as a substitute for the

ivy, except for tall work, is *Euonymus radicans*. Being of a rather dwarf habit it rarely exceeds ten feet in height; another disadvantage is that this plant is one of the first to be infested by the San José scale. But this trouble can be obviated by employing proper precautions, and in many cases the climbing euonymus will prove a valuable acquisition. The type has dull, green leaves with whitish veins and is the strongest grower of the species. *E. radicans* var. *Carriere* is identical, save that the leaves are lighter, brighter, and more shiny. In the variety *argenteo-marginatus*, of which the leaves are bordered with white, it is not unusual to find new shoots with leaves entirely white; as indicated by the name, the variety *rosea-marginatus* differs only in that the margin colour is a peculiar shade of pink. Var. *reticulatus* has leaves splashed with white, considerably smaller than those of any other variety.

Escallonia is a dwarf evergreen vine seldom met with as far north as New York on account of its lack of hardiness; it will, however, winter over safely if properly protected, and considering the comparative rarity of evergreen vines, is well worth a trial. In fact we are so ready to welcome any possibility along this line that we

should be equally willing to afford the extra care requisite for its success. Escallonia is well adapted for covering rockeries and low walls, appearing, at a distance, much like *Euonymus radicans*. A closer inspection will disclose some differences, especially the better colour of the leaves, their deeper incisement, and a looser growth, which is a distinct advantage, in that it shows off the foliage much more effectively. *E. Montevidensis* (sometimes referred to as *E. floribunda*) is about the best of this group, and will attain a height of ten feet. Being of an exceedingly dwarf nature, *E. macrantha* is most useful for covering the ground under trees, etc. Both these forms flower, but are far less prized on this account than because of their foliage.

Although not, technically speaking, evergreens, the varieties *Chinensis* and *Halliana* of *Lonicera Japonica*, could well be included in this group in certain cases; I have seen these varieties with bright, healthy foliage in February. Lonicera is valuable on account of its height, making more growth than either euonymus or escallonia, and, in the absence of more suitable material, would fit in well here and there among other vines.

As a result of skilful hybridizing, we now have

some roses that may be termed evergreen — in fact, *are* truly evergreen if planted in favourable situations, with plenty of sunshine, and in good soil. For a trailing plant, to cover a steep bank or a stone wall, nothing is more suitable or more appropriate than some variety of the Memorial rose. The small shining, dark-green leaves of these beautiful trailers are always attractive, and place the group among those plants most desirable on account of their foliage, even though we take no account of the blossoms.

The original type (*Rosa Wichuraiana*) is half evergreen and very hardy; by crossing this with *R. sempervirens*, which is less hardy, but, where it grows, absolutely evergreen, we have procured (or rather the progressive plant-breeders have procured for us) roses that are perfectly hardy and that carry green leaves all winter. The best varieties for foliage effect are Evergreen Gem, South Orange Perfection, Gardenia, and Manda's Triumph.

What are you going to do this year with that bare, shady spot in the lawn or under those trees, that has always given you so much trouble? Perhaps you have come to think that nothing will grow there. Well, instead of trying to start [illegible] thereby probably wasting) more grass

seed, try a few clumps of periwinkle (*Vinca minor*). It will not only remedy the bad place in the lawn, but will be a source of pleasure on its own account, for there is no plant quite so much at home, and therefore none that will do so well in shady nooks, as this. Nor are its flowering possibilities to be overlooked, for the charming aspect of the tiny flowers poking up through the dark-green foliage lasts for a considerable season. The periwinkle is a very rapid grower, and can be divided every third or fourth season if more plants are desired. There is one variety with white flowers, one with double flowers and a third with variegated leaves; but the most popular is the blue-flowered type variety, found in many a garden.

There is another species of vinca (*V. major*) that is popular as a decorative plant for use in vases, pots, etc., but unfortunately this form is not hardy. Its leaves are much larger than those of the periwinkle and are prettily mottled with white and light yellow.

Another little gem for shady nooks and wild spots is the trailing arbutus (*Epigæa repens*), but *only* after you get it well established. And this is more difficult than it sounds, for the graceful little vine has a most inconvenient habit of refusing to grow, except in locations that it

has itself chosen. Because of this difficulty attendant on transplanting it, the plant is less popular than its beauty deserves, except with those "May-flowering parties," which gather the wild flower by the armful, raise nothing with which to replace what they take, and are, thereby, rapidly assisting in the extermination of the delicate little native of our woods.

Under satisfactory conditions, arbutus will grow very rapidly, and soon make a handsome dark-green mat. These conditions involve a well-drained soil, light in texture, and the entire absence of any "fussing." If you can supply these wants, and once get the plant started, leave it severely alone, for it will do more by itself than you can ever persuade it to do.

A good trailer or ground cover for a sunny location is the partridge berry (*Mitchella repens*). This vine is very hardy, flowers in early spring, and makes, with its small leaves and loose, jagged style of growth, a very attractive show.

If you should ask me, as a man once did, if I know of a plant that will grow where nothing else will, I would recommend, as I did to him, *Pachysandra terminalis*. That man's erstwhile bare yard is now a mass of the "vine with the

iron constitution," and he has been supplying his neighbours with plants for some years. Pachysandra is especially desirable in waste, sandy places where the small, shiny leaves will soon carpet the ground, to remain a bright, cheerful colour from one year to the next.

CHAPTER XIII

Vines For Veranda Decoration

Arranging colours — Hanging baskets — Veranda boxes — How to make movable screens and trellises — English ivy as a veranda plant — Euonymus — The best annuals for the veranda — Hardy vines for sunny, semi-shady, and shady verandas.

By reason of their long, graceful, drooping growth and foliferous habit, vines are in a class by themselves for veranda decoration. But while there is only one opinion in this respect, there is room for discussion in regard to the kinds of vines and the manner of their use. Good and bad taste are both exhibited in the use of vines, especially of the flowering type. Some people create great, gaudy displays of colour, vivid in the extreme and full of discord; this is distinctly poor taste. I do not say that preferring good, lively colours is bad taste, but rather the way in which they are sometimes used. For instance, a box or hanging basket containing a scarlet geranium, a yellow nasturtium, and a blue morning glory all jumbled up together,

contains plants of individual merit, but absolutely unfitted for any part in such a combination. Now, you can use all these colours in certain arrangements so that you obtain a better general effect, and, at the same time, permit a greater appreciation of each separate hue. If you emphasize yellow in your hanging basket, do not attempt to use any colour but yellow, or white; white harmonizes with any colour. If you prefer blue flowers, use for contrast, white, or some green foliage plant; and similarly when aiming at scarlet effects. Don't, under any circumstances, bring scarlet, yellow, and blue together and expect the result to be pleasing.

In growing vines on veranda pillars, try to plant them with these same colour relations in mind. For instance, if you have a trumpet creeper (Tecoma) well established, don't bring a blue or a yellow flowered annual so close that it results in a conflict of the two colours. Anything in a scarlet, crimson, or white will serve, but not a blue or a yellow. Make the changes in colour transitional, and drift from a blue to a white or a green, before introducing a red or a yellow. In general, let white or green act as the dividing or connecting colour.

The use of hanging baskets is perhaps the

most common method for making the veranda attractive. There is here a great opportunity for the display of ingenuity and taste. Instead of having the baskets filled by the florist get a few plants and fill them yourself. It means very little trouble, lessened expense, and, very often, more desirable results; in fact, after you have tried it once, you will always prefer to be independent of the florist. In preparing a hanging basket for planting, if there is no hole in the bottom, bore one with a three quarter-inch bit. Cover it with a piece of broken flower pot, then spread about one inch of sifted cinders in the bottom; cover these with moss or similar material to keep the soil from sifting through, then fill with good, rich soil.

Let the use to which you are going to put the basket determine the kinds of plant used; if you want flowering vines for a good, hot, sunny location, a good combination is *Maurandia scandens* var. *alba* and any of the morning glories (Ipomœa). *Thunbergia alata* will work in well with any of the nasturtiums (Tropœolum) using *Euonymus radicans* or English ivy for green in both cases. Another good vine in bright sunshine is eccremocarpus, which combines well with the cypress vine (*Ipomœa Quamoclit*), since it affords a

tinge of scarlet. Remember always to figure on the effects of the colours when combined, and do not misunderstand me when I say that the maurandia will look well with *any* of the nasturtiums. I mean, by this, with any *one* variety and not with any mixture of two or more.

If the basket is to be located in a partially shaded position, the same vines will answer, providing of course that there will be sun enough to ripen the growth and keep it short and stocky. In densely shaded spots it is hard to find anything that will flower. You can get foliage plants, however, and English ivy, *Euonymus radicans* and *Vinca minor* are all valuable green plants for shady spots.

Hanging baskets should be watered often and generously, for, exposing so much surface to the air, they dry out rapidly. Moreover, since the soil space is limited, the plants are very apt to become impoverished for want of available food; in such cases, applications of liquid manure will work wonders. Water them twice a week with a solution of cow manure, diluted until it has the appearance of weak tea. You will notice the difference in a very short time.

Boxes of all kinds are often used along balustrades and in other places on a veranda, and

produce excellent effects when properly planted. They should be made square as regards depth and width, for a box narrower at the bottom than at the top, has but litle root space and involves a lot of unnecessary work; similarly, they should not be narrower at the top than at the bottom. A box six inches square is of very convenient size, but of course, the dimensions of the saddle of the balustrade or the pedestal wherever it is to stand must govern this feature to a certain extent.

In making the boxes, always bore some holes in the bottom to carry off drainage water, and, if the support is perfectly flat, plan to raise the box on a few strips of wood about one quarter inch thick. No plants will grow well in boxes with standing water about the roots. To lengthen the life of such a box, or even a wooden hanging baskct, char the inside as follows: before boring holes in the bottom, spray the inside of the receptacle with kerosene and set it afire; after the sides have burned about a quarter of an inch into the wood, turn the box upside down, and the flames will soon smother out. The best material for making porch boxes is one by six-inch planed yellow pine or cypress. Cypress is somewhat expensive, but will prove economical in the long

run. Always paint the boxes a deep, subdued colour, dark green being usually first choice.

Prepare and plant veranda boxes in exactly the same way as described above for hanging baskets, always using colours that harmonize with each other and with the general surroundings. Furthermore, always aim to produce a pleasing effect and not the always obvious result of a veranda box dragged in merely for the sake of the few flowers it contains. A good effect can be obtained by placing boxes upon the saddle of the balustrade, running strings thence to the top of the piazza, and training the vines on these screens. For this purpose, use twining vines, such as the nasturtium and morning glory; an especially valuable vine in this connection is the Canary-bird vine (*Tropœolum perigrinum*). The vine, when treated in this manner, not only screens the piazza from the view of passers-by, but also adds to the attractiveness of the entire environment.

Movable screens in a variety of forms can be made for the piazza, proving far preferable to the ordinary bamboo or paper affairs. The first requirement is a strong box about four feet long and some six inches square; a set of small casters on the bottom will greatly facilitate its

subsequent handling. Prepare the box as recommended above, as to drainage holes, charring, and filling. A box this size should have about eight three quarter-inch holes in the bottom, but avoid running them in a straight line or you will weaken the bottom of the box. As to plants for the box, the same requirements hold as for any veranda decorations. English ivy makes a good permanent screen; but flowering vines can always be used, providing there is enough sunlight on the piazza. If you have a small greenhouse where plants can be stored during winter, you can use tender vines like the jasmine, whose sweet fragrance will add still more to the beauty of the scheme. After you have planted the boxes, take some strips of wood about four feet long, an inch wide, and one half inch thick and nail them to the ends of the box; connect them at the top with a similar strip; bore holes with a gimlet in the side strips about four inches apart and run wires across from one strip to the other; then train the vines over the wires.

Movable screens can be made in other forms than the simple square or oblong. If you have a vigorous, good-sized vine started in a box, pot, or tub, a light, fan-shaped trellis is convenient and easily made. Five light dahlia stakes

Vines become in time integral parts of building over which they climb

They are generous and enhance the view both from and towards the piazza they screen

VINES IMPROVE EVERY SORT OF HOUSE

In the North, an evergreen vine, beautiful always, seems in winter to convey a touch of warmth

While in the South, a drapery such as this shields from the sun and to its beauty adds the charm of a cool retreat

VINES ARE INSEPARABLY ASSOCIATED WITH HOUSES

are needed, one for the centre upright, two at the bottom, placed almost horizontal, and the other two midway between these and the centre stake, one on each side. Stretch wires around the stakes about four inches apart, then train the vines uniformly over the wires. To meet special needs, other forms can be devised, any one of which will prove both a great comfort and a great attraction on a sunny piazza. But remember that sunlight is an essential with flowering vines; without it they are almost certain to turn out dismal failures.

Among flowering vines for piazzas, I would recommend *Thunbergia alata*, very free flowering; *Maurandia scandens*, a good combination of foliage and flowers; and *Eccremocarpus scaber*, with a good, deep, orange-scarlet flower. Because of its shade-withstanding abilities, the best of all foliage plants for the piazza is the English ivy (*Hedera Helix*). Its uses have such a wide range that there is hardly a case where it does not prove valuable in some way or other. If, for instance, you have palms or other plants on your piazza, let the eye be carried up to them through drooping clusters of ivy leaves, rather than over the bare, ugly boxes, that so often are unpleasantly obtrusive. Set a few small

ivy plants along the edge of each tub or box, or, if you prefer, plant them in small, individual pots that you can stand around the top of the tubs, and can rearrange whenever it is necessary to hide some particular spot more completely.

A good substitute for the ivy, although less able to stand the shade, is *Euonymus radicans*. Its varieties, with their variegated white and green foliage, are very attractive and especially adapted for use in hanging baskets. All the annual vines described in Chapter XI are excellent subjects for the veranda, but I would particularly recommend, the Canary bird vine (*Tropæolum perigrinum*) for yellow effects, the cypress vine (*Ipomœa Quamoclit*) for scarlet, *Maurandia scandens* var. *alba* for supplying white, and *Ipomœa purpurea* var. *atro-cærulea* as the most useful blue-flowered vine. The many species of Lantana, though not really vines, resemble in their weak, trailing habit, some of the best basket and pot plants. Probably *L. Sellowiana* offers the greatest possibilities, although several other forms are very satisfactory, remaining in flower throughout the summer months.

Now a word or two about the outside treatment of the veranda. There are some vines that are remarkable for their striking flowers and great

display and yet are not desirable plants for the veranda. What one wants around the piazza is something that will look well for as long a period as possible; not restricted to one burst of beautifully tinted blossoms, then, perhaps, merely a mass of sickly foliage the rest of the season. For a good, sunny situation the continual blooming of the sweet-scented jasmine (*Jasminum officinale*) makes it the most desirable of all climbing plants; but, as mentioned before, it is tender and needs protection during winter. The grand foliage and long-flowering season of the Wichuraiana type of climbing rose, renders it far preferable to the rambler type, although the ramblers are more showy when in flower. This is, however, for only a few weeks in the summer, while the Wichuraianas are always handsome. On account of its long-flowering season and attractive foliage, the trumpet creeper (Tecoma) is also classed as a desirable veranda plant. The wistaria, perhaps the favourite vine for a sunny piazza, is too well known to need further description; but a hint as to its training: run the shoots along the eaves of the piazza so that the great, graceful clusters of blossoms can be enjoyed from the inside, as well as by the observer from a distance. A good combination

of flowers and foliage is furnished by the actinidia, while undoubtedly, the best plant for a sunny veranda, as far as foliage is concerned, is the Dutchman's pipe (*Aristolochia macrophylla* or *A. sipho*). The distinctiveness of this vine makes it a good subject in a combination, the golden-leaved honeysuckle, for instance, being used as a background. For a semi-shady veranda, where light occasionally plays on the plants, the best flowering type is the honeysuckle, the choice species being *Lonicera Heckrotti* and *L. Japonica*, vars. *Halliana* and *reticulata-aurea*. But as a combination of foliage and flowers *Akebia quinata* is a close second. Still another good vine for such a location is the false bitter-sweet (*Celastrus scandens*); and finally, for a foliage plant, *Euonymus radicans*, in several desirable forms.

In densely shaded spots, where a veranda faces the north, it is difficult to make any flowering vine grow. In this case, after proving for yourself that none of the last-mentioned sorts will thrive, you will have to resort to strictly foliage plants, with English ivy as the most successful thing we have. Nevertheless, the beautiful fall colours of the ampelopsis family make it distinctly worthy of notice.

CHAPTER XIV

Stove, or Tropical House Vines

The habits of tropical vines — Their care in the greenhouse — Supports for stove house vines — The balloon trellis — The seven species of allamanda — Aristolochia, or the birthwort family — How to grow the mountain rose in the North — Bougainvillæa as a vine — A vine with associations — Cissus, clerodendron and cryptostegia — Two monstrosities of the greenhouse.

The most magnificent vines, both for foliage and flowers, are tropical plants, and, if we wish to enjoy their beauties, they must needs be cultivated in a greenhouse. These tropical plants in their native haunts have two distinct seasons, the rainy season and the dry season; or, speaking horticulturally, we would say the growing season and the resting season. In actual practice, this is found to be true, with but very few exceptions. Generally, tropical plants require an abundance of heat, moisture, and available water for the roots during summer, with altered conditions in winter, when we lower the temperature, reduce the moisture till the air in the house is practically dry, and give just sufficient

water at the roots to keep the plants from shrivelling.

By taking advantage of the alternation of seasons and the associated water supply, the flowering of these tropical plants can be governed to a certain extent. The natural growing season is from March to September, the other months being "dry." While we are unable to completely reverse these periods, we *can* dry off the plants in July and start them into growth again in December, thus gaining three months over nature — often a most desirable gain in the case of plants having conspicuously beautiful flowers.

For our purpose, the tender vines are divided into two horticultural groups: first, those that require what is known as a "stove," or tropical house; and second, those that will thrive in the cool greenhouse. In the tropical house, a high temperature is maintained at all times, the heat, during the growing season, never falling below 65° at night with a rise of seven to eight degrees on dull days, and of ten to twenty degrees on sunny days, when the house can be freely ventilated.

All tropical plants should be shaded during the summer, except where noted; not that the sun will burn them, but the shading helps to maintain the atmospheric conditions on a more

uniform basis and also prevents too rapid drying out. Shading may be done in many ways, such as painting the glass with whitewash (with a little salt or kerosene added to help hold it), or by slat-screens, or canvas blinds placed outside the house.

When growing vines under glass, some sort of support or trellis is essential. Wires stretched lengthwise of the house, ten to twelve inches from the roof, and about two or three feet apart, answer admirably. Or the wires may be strung vertically along the back wall. When growing the plants as pot specimens, special forms of wire frame are often used. For such vines as allamanda, stephanotis, etc., it will suffice to stick five or six stakes upright against the rim of the pot, spreading them out at the top or bringing them together in the centre and tying; or, as before, the wires may be left standing erect.

A balloon frame is very popular. This is made by taking a number of wire rings of different sizes and adjusting them in position on other wires extending vertically from the sides of the pot. The smallest ring is put at the top, the largest in the centre. Extend wires from top to bottom in several places, and, finally, drive a stake into the centre of the pot of earth, having

it long enough to extend to the top ring of the balloon which is firmly tied to it, as is the bottom one also.

Nearly all the tropical vines are evergreen, and, therefore, as a rule, require very little pruning; however, in the case of vines grown for flowers produced on the *new* wood, hard pruning naturally becomes an essential, because it tends to the development of a greater profusion of lateral shoots.

As a flowering subject, the allamanda is unquestionably the superior of all other greenhouse vines. It bears clusters of from three to six tubular, yellow flowers with a flat expansion, or limb, measuring five to six inches across. The allamandas are weakling vines; that is, they twine, but so slightly, that the habit is of but little benefit to the plant from our point of view, and training is necessary.

The best way to handle such vines is to stretch wires about three feet apart, lengthwise of the house, about ten inches from the glass, and to keep the shoots tied to these. Prune hard if you want flowers for cutting — they are produced on the extreme tip of the new growth, and only a couple of eyes of the previous season's growth should be left. If, however, the plant is being grown

primarily as a vine to cover some part of the house, the longer growths are retained, or at least only lightly pruned.

The allamanda demands a well-enriched border, where it will never feel the need of food. A good plan is to put a fresh mulch on the ground when the vine is pruned each season. I use almost pure cow manure for this purpose. Liquid manure may be used to supplement this, and can be given in connection with the mulching. There is no danger of getting the soil too rich if other conditions are right. This plant also requires abundant heat and moisture, and the temperature of the house should never be allowed to fall below 60° when the plant is in growth. The nearer it is kept to 70° the better the plant will grow.

Syringing should be given at least twice on bright days. This serves a double purpose; namely, supplying the plant with moisture, and helping to keep the mealy bug in check. This pest is the one great enemy of the allamanda, for which it appears to have an inordinate fondness.

During winter, when a rest may be given, the temperature can be let fall as low as 50° (but not any lower), and the water supply at the roots reduced considerably, giving just enough water to keep the plant alive. My own plants do not

get any water at the roots during December and January. At the same time, if I saw that the plant was suffering for the want of water, I would not hesitate to give it some. The spraying can also be dispensed with during the resting period, but if the mealy bug appears, start spraying immediately.

There are seven species of allamanda that are worthy of cultivation, and each one has its own merits. For the value of its cut blooms *Allamanda nobilis* leads. Its blooms are four to five inches across, and the plant itself is a very rank grower, often attaining a height of forty feet. The two more commonly grown species, Schottii and Hendersoni, are almost identical, the difference being merely that the throat of the flower of Schottii is darker than the other part of the flower, while in Hendersoni the throat is lighter, and there is a slight purplish tinge on the outside of the flower. Both vines will attain a height of thirty feet.

The best allamanda for training as a bush specimen is *A. Williamsi*, a very free-flowering, comparatively dwarf-growing plant. It is generally used as a pot specimen. The remaining useful species are *A. cathartica*, *A. nerüfolia* and *A. grandiflora*.

Because of the peculiar formation and extraordinary colouring of their flowers, the birthworts (Aristolochia) are considered as among our best greenhouse vines. This family includes the pelican-flower (*Aristolochia grandiflora*) so named on account of the flower resembling in formation the neck and bill of an immense bird. The colours of the pelican-flower are gorgeous, the blossom being white, blotched, and veined with purple; but, sad to state, the flower has the offensive odour characteristic of the entire family, and which prevents its many members from becoming really popular. A larger-flowered variety of this species (var. *Sturtevantii*) is more often seen; the flowers are a foot or more across, splashed and veined with rich, velvety crimson, and the tail of the flower is fully three feet in length. The variety *Hookeri* is devoid of the obnoxious odour of the family, but does not grow so tall as the other two, about fifteen feet being the maximum height, whereas the others may reach twice that height.

The largest-flowered of all vines is the herbaceous birthwort (*A. Goldieana*). The enormous blooms, sometimes twenty-six to twenty-eight inches long and twelve inches across, are of a deep yellow with chocolate markings. The plant

should be thoroughly dried off in winter, when the stem will die down to the ground. In spring, it will start into growth again and may be watered more freely.

The best of all the birthworts for the average person to grow, just because its flowers are of a of reasonable size, is *A. elegans*. The flowers are the richest purplish-brown with white markings, and are produced in great profusion.

Other desirable species are *A. ridicula*, flowers about five inches long, dull white with purplish-brown markings; *A. ringens*, flowers about ten inches long, pale green marked with dark purple; *A. Westlandi*, flowers about six inches long, yellow, brown, and purple, beautifully splashed and blotched. There is also a host of similar species, of interest only to the collector, but of which any may be substituted for the last named, if desired.

The aristolochias are twiners, and the greenhouse varieties are mostly soft, tender growers. It is therefore necessary to provide a good support for them to climb on — one that is not too large in circumference. Wires stretched vertically along the back wall about one foot apart, make as good a trellis as anything. Set out the plants in an open border for best results. A liquid feeding

from time to time will help matters considerably, but the solution must be weak. The plants enjoy the heat and moisture of a stove house, but will endure a drop in temperature to 60° at night during the growing season. They should be sprayed twice a day during that period.

The flowering period of the family is much shorter than that of most vines and its members take a long rest. They can be forced earlier by drying the plants well in September and starting them into growth about January 1, instead of six weeks later, as is the usual course.

There are two distinct groups of the birthworts — one evergreen, the other deciduous. The former requires very little pruning, just the removal of the very weakest growths; nor does the deciduous type require severe treatment. In early spring, before growth starts, it will be sufficient to remove the very weak and poor shoots.

For a warm house that you do not shade, the mountain rose (*Antigonon leptopus*) makes an excellent subject. It requires abundance of light but will then produce freely its pretty, pink flowers which are much appreciated by honey bees. In the warm South, the mountain rose is largely grown on that account and is regarded

as one of the best of the hardy vines for regions below Atlanta. The plant requires an abundance of water when in growth, but as it is tuberous rooted, it should be very sparingly watered during the winter, or resting period.

Planted out in an inside border, it will do its best, but it can be grown very well in a large tub or pot, if given an abundance of liquid manure during the growing season. It climbs by means of tendrils and will grow to a height of twenty feet; but it needs attention, for, like all vines of the tendril type, it is apt to grow where it is not wanted. This plant can stand a great deal of drought and has been known to live in hot, arid places where rain has not fallen for months; it may also be used as a pot plant if trained on a trellis. During the growing season, the temperature in the house must not fall below 60°.

Although, technically speaking, the bougainvillæa is not a vine, still its merits as a pillar plant justify its inclusion here. It is valuable both as a flowering plant in the greenhouse and for cutting. The flowers are borne on branches, sometimes over three feet long, and are of a peculiar shade of purple — or, to be correct, the bracts supporting the insignificant flowers

are purple. There are three of these, each one about an inch across, forming a sort of chalice around each cluster of three flowers.

This plant is not hard to please as regards sunshine or shade, and any temperature above 55° will suffice, although 60° is better. Plant out in a well-enriched border, as the tremendous roots need abundant space; also, feed freely during growth. The bougainvillæas can be grown as vines if trained on wires stretched about twelve inches from the roof of the house, or they can be led up wire-frame trellises around a pillar, up to twenty feet in height. The plant needs hard pruning. If your specimen does not bloom, cut it down to the two bottom eyes; ordinarily, it should be pruned back to a couple of eyes of last season's growth. If, after the first crop of flowers (borne during April and May) is past, the growth is cut back hard, a second crop will appear in August or September.

One great advantage of the bougainvillæa is that it can be made to flower at almost any time, for it can be kept dormant just as long as water is withheld from the roots. It can be grown as a pot plant without a trellis, since the shoots can be tied in any position.

A plant ofttimes grown for its associations is

the crab's-eye vine (*Abrus precatorius*). The interest centres in the seeds which are less than a quarter of an inch in diameter, bright scarlet, with a small black spot. They were formerly used in India as standards of weight, and are still used for making rosaries, etc.

Plant the vine in the open border, in a warm house and water freely during summer. It will attain a height of twelve feet, and produce the small pink and white flowers freely.

I think that on all counts the very best foliage vine is the so-called trailing begonia (*Cissus discolor*). It requires a stove temperature, and is usually grown in a pot and kept trained to some kind of a trellis or balloon frame. Treated thus, it is an attractive plant for house decoration; but it is much more impressive planted out and allowed to ascend a pillar or support in the stove house. The foliage is a bright, velvety green, beautifully mottled with white, with the under surface deep reddish-purple.

Prune back in early spring after the resting period, and, just before growth starts, remove the very weak shoots. With good, rich soil and abundant heat (the temperature should be about 70°), this vine will attain a height of twenty feet. The plant is tendril bearing and needs

WISTARIA—THE MOST BEAUTIFUL, VALUABLE AND POPULAR OF WOODY VINES

The Chinese species (*W. Chinensis*) is by far the best. "It has in its makeup practically everything that the plant lover asks"

The severe line of masonry is destroyed, and a beautiful reflection effect is created by planting vines along a canal

There are no hard outlines of porch, rail, or balustrade where vines run rampant and spread their mantle of greenery

THE SOFTENING EFFECT OF VINES

training, as the young shoots sprawl about everywhere.

C. Amazonica, with reddish leaves, veined with silver, looking like a variegated form of the above, is very attractive. For a cooler house, the kangaroo vine (*Cissus Antarctica*) is better adapted. It will stand a temperature as low as 55°, but its foliage being plain green is not as attractive as that of the others.

Because of the ease with which it can be grown, the glory tree (Clerodendron) is one of the most popular of the flowering vines. It is a twining evergreen shrub and the foliage is also attractive. For this reason it should not be allowed to get dry while resting. It is a good plant for growing in pots and training to a small trellis, being easily kept within bounds. But for a really good show of flowers or for cutting, plant it in the border and let it twine around a pillar or trellis. Water freely during summer when flowering; during the resting period, water sparingly. Although the temperature may safely be allowed to fall as low as 50° during that time, 70° should be maintained while the plant is in growth.

C. Thompsonæ is the variety most worth growing. It bears large panicles of flowers, pure white with crimson centres, and is very floriferous.

Under favourable conditions, it will grow to a height of twelve feet. For gorgeous scarlet flowers, grow *C. splendens*, var. *speciosissima*, the best of all stove climbers in its colour. *C. Thompsonæ*, var. *delectum* is a larger-flowered form of the species, and *C. speciosum* has deep, rose-coloured flowers suffused with red. All require the same general treatment.

A tropical vine rarely seen, but of easy culture, is *Cryptostegia grandiflora*. It is grown only as a curiosity, because its juice, when exposed to the sunshine, produces caoutchouc. The plant is a twiner and likes an abundance of both heat and moisture, but there are so many vines of merit that it would be useless to grow this plant unless for the sake of its unique feature.

If you want to grow a plant as a curiosity for its peculiar and interesting form of growth, the ceriman (*Monstera deliciosa*) will surely suit you. As the name suggests, it reminds one irresistibly of some gigantic, crawling monster about to clutch something with its long, fleshy, finger-like, aerial roots. This can be grown in the stove house, but will do well in any house where the temperature does not fall below 55°. The leaves are thick and fleshy, about one to two feet long, dark green, and irregularly perforated. It is

best managed if planted in a big pot or tub and stood in a corner of the house; it will then crawl up the side walls to the height of thirty feet; but it is very easily knocked loose.

The ceriman bears a peculiar, odd-looking, edible fruit, with the flavour of a mixture of pineapple and banana. It reminds one of a pine cone at first glance, but is covered with small, flat, six-sided scales, or plates. When the cone is ripe, these are easily removed, exposing the whitish, soft flesh.

Of interest to the plant student, and grown in the same way, is the shingle plant (*Monstera acuminata*) which in the young state has small leaves and is suitable for training on the rafters in the stove house. When the plant attains considerable size, it develops the enormous perforated leaves of the genus.

CHAPTER XV

Vines for the Cool House and Dwelling

Managing the cool house — Greenhouse climbing roses — The potato vine — Lapageria — The wax plant — Jasmines — The historic passion-flower — Leadworts — The creeping fig — An evergreen housevine — Clematis for indoors — Tender forms of the trumpet vine — Ornamental asparagus — Some vines for the expert.

From among the vines discussed in this chapter come all that are used for house decoration. Not only are they adapted to the moderately cool temperature of the dwelling, but also they will withstand its variations and, to a considerable extent, the rough handling and uncongenial conditions native to the living room. At the same time I have included some vines which will do well in the warmer house described in the previous chapter. My object in including them here is to even the thing up, for we usually have but one stove house to a dozen of the cooler houses, those with temperatures varying from 60° to 45° at night. As with other houses, the heat should be advanced from five to eight degrees on dark, and from ten to twenty degrees on bright days.

Most of the vines described herein are light lovers, and, except where noted, no shading should be practised. In cases where plants show any inclination to burn, and a desire for shade, always use a "slat" trellis which breaks up the strong rays of the sun and yet admits sufficient light. To make this, lay two shingle laths on the ground about four feet apart, nailing plasterer's laths across them, leaving the width of a lath between each two. Such screens can be made in very convenient lengths; twelve-foot shingle laths will be just right if cut in two. These medium-light lovers should be supported by wires as described in Chapter XIV, but it is always best to plant them on the north side of the house, because if planted on the south side they create too dense shade for the other plants. This objection does not hold in regard to stove vines, since other plants growing in a stove house invariably require shade.

All temperatures mentioned below are for winter, when the plants are resting; during the growing season the houses should be run from five to ten degrees warmer.

Most of us know—or think we know—what roses are; but have you ever cut the Maréchal Niel with stems sixteen to eighteen inches long, with

five to six buds on a stem? I have done this year after year, by keeping the plant trained to the north wall of a rose house where the night temperature never falls below 55°.

Roses should be planted out in a well-prepared, well-enriched border and fed freely as they start into growth. They should be sprayed on bright days during the growing season and allowed to rest for a couple or three months, say December, January, and February, by being watered at the roots sparingly and sprayed only occasionally.

After the resting period, just before starting the plants into growth, prune them severely, leaving only a couple of eyes of the previous season's growth. After the first crop of flowers is past, prune and begin feeding again, and you will soon have a second and perhaps even a third crop before the dark days come.

Maréchal Niel, a grand rose, with big, pointed, yellow buds and a delicious fragrance, is worthy of a place in every greenhouse suited to its cultivation. The best pink climbing rose is the Climbing La France, free flowering in beautiful clusters of blossoms. Another valuable rose for this class of work is the Banksia (*Rosa Banksiæ*) which bears small yellow roses of exquisite odour in clusters. There is also a white variety,

the White Banksia. A good substitute for Maréchal Niel, although not its equal, is the yellow Gloire de Dijon. The best red is Riene Marie Henriette. The Cherokee rose (*R. laevigata*), a tender, bushy, white species orginally from the Orient, but now naturalized in the South, can also be forced in the cool house with good results.

One of the grandest flowering vines we have for a greenhouse where the temperature does not fall below 50°, is the potato vine (*Solanum jasminoides*). This plant produces large clusters of flowers an inch across, white with a tinge of blue. It should be planted out in the border, generously fed while in growth, and sprayed often, except when in flower. It is a twiner, but should be trained nevertheless. As it flowers on new wood, it should be pruned just before it starts to grow, usually in March, after a winter's rest. Under favourable conditions it will attain a height of twenty feet. A larger-flowered form is *S. jasminoides* var. *grandiflorum*, while *S. jasminoides* var. *variegatum* has variegated foliage.

A vast improvement on the potato vine is found in *Solanum Wendlandii*, which is a more vigorous grower, able to attain a height of fifty feet. The flowers, produced in immense clusters, are about two and one half inches across and pale

blue in colour. This is one of the best vines we have for the cool house.

A fine old European favourite that deserves more attention in this country is the Chilian bell flower (Lapageria). The white or rose flowers are produced freely on mature wood, therefore do not prune heavily, merely thin out occasionally. The vine is rather hard to please as to soil and location, requiring in the former respect a comparatively heavy clay. It is also a great moisture lover, but to prevent the accumulation of stagnant water it is well to provide a loose, gravelly subsoil, or under drainage.

The best location for the bell flower is the back wall of a greenhouse, partially shaded in summer. In winter, even full sunlight will not hurt the resting plant. A good rest is essential at this time, when a little water supplied to the roots every two weeks will be sufficient. The temperature may drop to 45° without injurious results, until the vine shows signs of budding out, when increased heat and plenty of water must be supplied.

There are two forms of lapageria, *L. rosea*, the type, with beautiful, light-pink blossoms, and *L. rosea*, var. *alba*, with pure white flowers.

A good vine both for foliage and blooms is

the wax plant (*Hoya carnosa*). It looks well growing on the end wall of a greenhouse, trained to vertical wires about six inches apart. When not in flower it is a good bank of green. Although the plant clings by means of rootlets, it is well to disregard the fact and to train it upon wires. After the vine is set in the border, the temperature of the house should not be allowed to fall below 50° during winter nights. Keep it very dry while resting, as to both atmosphere and soil, save for an occasional spraying to keep down the mealy bug, which seems rather partial to this plant. No winter pruning is necessary, as the flowers are borne on mature wood.

In the spring, when growth starts, the heat can be advanced about five degrees and the roots watered more frequently. But never get the house charged with moisture. The flowers are borne in large, attractive umbels, but cannot be cut to advantage because of the habit of flowering from the same spur the following season and from the young shoots the following year.

This is the best vine for dwelling-house culture. Although it likes the light, it will do a great deal better than most plants in the darkness and dry atmosphere of a dwelling. I have seen a wax

plant that has been grown in a dwelling-house for ten or twelve years, each season showing improvement, and at the present time covering the entire window. It is a treat to see it in summer when in flower, or even in winter when its pretty, dark-green foliage is its only source of beauty. The vine is also an excellent subject for training over small supports such as balloon trellises, etc.

The best species is *Hoya carnosa*, with white flowers of a pinkish tinge and quite fragrant. *Hoya globulosa*, with straw-coloured blossoms, borne in large umbels is also an effective form. There is also a large-flowered type (*H. imperialis*) with blooms two or three inches across, of a dull-purple colour. This is not as good for house cultivation, since it will not stand the same abuse as the other species. All three will attain an average height of twenty feet.

If you are fond of fragrant flowers for cutting, grow the jasmines in a house in which the temperature averages 55° to 60° at night, planting them in a small, enriched border. These plants do not require any great amount of rest, merely a partial drying off in winter. Some varieties can be kept in flower almost the entire year.

Jasmines are most successful when trained to

a trellis eight or ten inches away from the end or back wall of a house. They require very little pruning, but should be kept sprayed and liberally fed if the flowering season is to be prolonged. They are splendid subjects for training over small trellises, especially as veranda decorations, where their sweet odour is always an added attraction. The best form is the Arabian Jasminum (*Jasminum Sambac*) which will produce its white flowers the year round if properly fed. It requires a rather warm house; 60° will do but 65° is better. A good winter-flowering type is *J. Gracillimum*, which should not be dried off until after it has borne its clusters of white blooms. An exquisite old favourite is the "sweet jessamine" of poetry (*J. officinale*) that bears in summer small clusters of white, sweetly fragrant flowers. And yet an improved form, with the same fragrance but larger flowers is *J. officinale* var. *affine*. The most fragrant of all is the Royal, Catalonian, Italian, or Spanish jasmine (*J. grandiflorum*) also white-flowered, which is used extensively in making perfume. The best yellow-flowered type is the Italian Yellow jasmine (*J. humile*) that blossoms in late summer.

A plant suited to cool house cultivation, but especially interesting because of its association

and its supposed symbolism, is the passion-flower (Passiflora sp.). It has stood for years as the flower emblematic of the crucifixion of Christ, and, in the peculiar formation of its blossoms, bears out to a remarkable degree this curious interpretation assigned to it when in 1610 it was brought to the notice of Europeans. The plant is, frankly speaking, more novelty than standard, because of the scant production of its flowers which are remarkable in colour and formation.

The passion-flower requires the treatment ordinarily offered greenhouse vines, but will stand a temperature as low as 50°. The soil should not be so rich as to cause excessively luxuriant growth, any lack of food being made up in applications of liquid manure during the period of growth. All tendrils should be removed and the plant trained artificially. Very little pruning should be practised, as the flowers develop from mature wood. For this reason the vine should never be planted save in large houses, where it will have the unrestricted space essential for successful flower production.

The best species is *Passiflora alata.* Its flowers, crimson, varied with purple and white, measuring six or seven inches across, are produced in late

spring and summer. This variety likes the heat and will do well in a night temperature of 60°. The best blue-flowered form is *P. cærulea*, or, rather, the predominant colour of its variegated blossoms is blue. These are succeeded by egg-shaped, yellow fruits which are quite attractive. The fruit of the popular Granadilla (*P. quadrangularis*) is some six inches long and not only attractive, but also edible. To procure it, however, the white, red, and purple flowers must be hand-pollinated in late summer. The best red-flowered type, (*P. racemosa*), is valuable only because of the colours of the blossoms, which are rather small. Other good varieties are *P. Raddiana*, a very common form, with crimson and purple flowers; *P. edulis*, white- and purple-flowered, with large, lobed foliage, and edible fruit; and numerous other species less known and but slightly grown.

A good vine for cut-flower purposes and for training along the rafters and supports in a house where the temperature is kept above 50° is the leadwort (Plumbago sp.). It is very free flowering, producing clusters on stems about a foot long. The vine requires the general treatment necessary for vines already described, but will stand drying off thoroughly during

winter. In fact, no water at all need be given during the resting period, but generous feeding is called for just before the flowering period. Under good treatment the vine will attain a height of twenty feet. It can be made to flower out-doors by lifting the roots in the fall, storing them in a dry cellar over winter, and planting them in the open the following spring.

The best species is the blue-flowered *Plumbago capensis* which will flower in summer from cuttings taken the previous fall. Variety *alba* of this species is the best white-flowered leadwort we have. Other forms are *P. rosea* with purplish-red blossoms; *P. rosea* var. *cocinea*, flowers slightly larger; and *P. scandens*, bearing white flowers. All the leadworts can be made to flower in late winter by drying them off very early in the fall and starting them into growth during midwinter.

The best foliage vine for the cool house is the creeping fig (*Ficus pumila*), which has small, dark-green leaves in agreeable profusion. Its one requirement is good soil. Set the vines in an enriched border and feed sufficiently to satisfy their gross appetite. The plant, climbing by means of rootlets, will cling to any wall, trellis, or support, and requires absolutely no care beyond cutting it away from anything you do not wish

it to cover. A peculiarity of the vine is that, when a branch bears fruit, it loses all the characteristics of the plant, grows out from the support, develops larger leaves and shows no inclination to climb. In fact, one would never recognize it as a part of the original stem.

A smaller-leaved variety is *F. pumila* var. *minima*, which I rather prefer for back walls, for the very small leaves, thickly set, make a very attractive wall cover. Both vines will attain a height of ten feet. They require a night temperature not lower than 55° in winter.

For a house that cannot be kept above 45° in winter, the best flowering vine is the evergreen cross vine (*Bignonia capreolata*). The abundant, tubular, yellowish-red blossoms have given this vine the additional, though less common, name of trumpet vine.

Differing from most vines, bignonia should have its root space restricted for best results. It is therefore often grown in a large box placed under the staging in the cool house. It must be fed freely when the flowering stems are growing. Heavy pruning is required and also a daily spraying except during the flowering period. To ward off the mealy bug, spray once a fortnight with a strong kerosene emulsion or tobacco decoction.

The trellis for this vine is best about a foot away from the wall, so that a free circulation of air is permitted around the stems, which must be thoroughly ripened to ensure flowers.

A good winter-flowering type is *B. venusta*, on which the orange-crimson flowers are borne in large drooping spikes. This species requires a house a little warmer than the cross vine, but, because of its free-flowering character, is one of the best rafter plants we have. Another good species requiring a considerable degree of heat is *B. purpurea*, in which the small size of the flowers is balanced by their exceptionally attractive purple and white colouring. Other useful variations are *B. buccinatoria*, which, with its exceedingly long, deep-red and yellow flowers, does best in a cool house, and *B. speciosa*, which, in a somewhat warmer atmosphere, bears freely yellowish and lilac flowers.

Although a fastidious plant out of doors, the clematis can with impunity be roughly handled in a greenhouse where the conditions suit it exactly. Plant the vine in a thoroughly enriched border and train to a wire trellis. It can be made to cover the supports and rafters. The most satisfactory temperature is 45° or 50° in the winter while the plant is resting. After the

Ampelopsis tricuspidata appreciates the smooth surface and warmth of a brick chimney

But then, it will grow all over a building, too

In winter. Crimson ramblers and clematis are bare in winter, but—

In summer is this not better than a rigid iron post or bracket?

flowers have gone, prune — but very lightly — for the greenhouse varieties are mostly of the cærulea type; *i. e.*, they flower on the ripened wood. Of these, the best are Lord Lanesborough, a lilac and purple variety, which if started early can be had in flower by March; and Lady Lanesborough, very similar, but of a grayish shade. Louis van Houtte flowers early, and is a good, rosy white. This type of clematis can be cultivated and made to flower in pots, using bamboo stakes for a support. *C. florida* is another very desirable species with white blooms, barred with purple; *C. individa* and *C. crassifolia* are the best of the several fine, pure white species.

The tender varieties of true trumpet vine (Tecoma sp.) are excellent rafter plants and will furnish quantities of cut flowers. The plants in the border of a well-lighted house will do well even if the temperature goes as low as 50° during winter. They should be sprayed daily except when in flower, and fed freely when beginning to bloom; moreover, they should have plenty of room in order to flower freely. The best method of training is on wires stretched about a foot from the wall, although the vines will cover the roof also if so desired. The trumpet vine is a very late bloomer, at which time it needs

large amounts of water at the roots. A very brief rest, in fact, merely a slight drying off, is sufficient after the blossoming period.

The best species, called the bower plant of Australia (*Tecoma jasminoides*), is an evergreen which bears, during late summer, small clusters of rosy-white flowers. A form that is probably more common, is the cape honeysuckle (*T. Capensis*). This species carries large spikes of orange-red flowers during late summer and well into the fall. Other good species are the wonga-wonga vine (*T. australis*), with white and yellow flowers in large clusters; and *T. Ricasoliana*, characterized by large, loose panicles of pink flowers striped with red.

Tacsonia is an attractive vine resembling closely the passion-flower in manner of growth, in the treatment required, and in its flowers, which, though large, are exceedingly pretty. The best known species is *T. Van Volxemii* with immense red flowers, often seven inches across. *Tacsonia Exoniensis* is also red flowered but of a better shade, tinged with pink and violet. *T. mollissima* is the delicate species of the genus with small, drooping, rose-coloured blooms.

The asparagus family, of which one species is a favourite vegetable with many persons, can

be represented in the cool greenhouse by several very attractive, ornamental foliage species. These are especially valuable in the conservatory for training over small supports.

If desired for permanent effect, these vines should be planted in an open border and allowed to ascend wires stretched every six inches along the back or end wall of the house. They require little or no pruning, should be rested but little during the winter, and must be shaded in summer. The best species to grow in pots is *A. crispus*, a dwarf (four to eight feet), but very attractive on account of its peculiarly glaucous-green foliage. For a permanent effect, use in the border *A. verticillatus*, of which the tufted, dark-green foliage will cover fifteen feet of wall. In a warmer house *A. lucidus*, a low climber with edible tubers, will do very well in pots. *A. retrofractus* is also an excellent subject for pot culture, especially adapted to covering small trellises in the dwelling, in spite of its extreme trailing habit.

Where the temperature does not fall below 40°, and where there is sufficient head room for its development, the sweet pea (*Lathyrus odoratus*) is a very popular source of exceedingly beautiful cut flowers. While it is well adapted

to cool house conditions, its greatest opportunities are not here, but rather as a cut flower, forced for winter picking. I will therefore discuss the plant from that point of view in the next chapter, where I will include details of its management.

There are several other vines that can be grown under glass, but they are very inferior to those listed, whereas the expense of cultivating them is no less than for the better kinds. I would therefore advise no one to grow them except as a collector, or as an expert. Nevertheless, for these individuals, I will mention a few of these less satisfactory genera. The corkscrew flower (*Phaseolus Caracalla*), which has purple and yellowish flowers of some fragrance, should be grown in a light house. The mountain ebony (*Bauhinia Galpini*), has clusters of red flowers from spring till fall. A very tall-growing vine, with fragrant white flowers in spring, is *Stauntonia hexaphylla*. A plant cultivated because of its scarlet fruits, beautiful in their autumn colouring, is *Kadsura Japonica*. The flowers, in spring, are inconspicuous, but the dark, lustrous foliage is very attractive, especially when set off by the fruit. A plant closely resembling the akebia, but tender, and requiring cool house culture, is *Holbœllia latifolia*. It is monoecious, the two

kinds of flowers appearing about two weeks apart. The pistillate blossoms, appearing first, vary between purple and greenish-white. The staminate blooms, opening two weeks later, are a brighter shade and very fragrant. This vine needs a good deal of head room and is but poorly adapted to any but the largest houses.

CHAPTER XVI

Forcing Vines for Winter Use

The principles of forcing plants — Ornamental asparagus and how to grow it — Smilax — Climbing roses for winter — Sweet peas all the year round — Wistaria in-doors — The value and beauty of the clematis — Stephanotis, jasmine, and bougainvillæa — English ivy, the ever-useful evergreen.

Forcing, as one might guess, means the pushing or hastening of plants against their will, nature, habit, or whatever you decide to call it. It is not natural for any of the plants enumerated in this chapter to flower in winter, hence we must resort to artificial means to make them do so. From this point of view, it should be easy to realize, that, flowering under adverse conditions, the vines need and deserve more than the ordinary amount of care. The one thing above all others that forced plants will not stand is a draugth. Let one of them, when in flower, stand in a draught of cold air for a few minutes and the flowers and foliage will soon wilt. Be careful also in watering. Plants of any kind that produce all their flowers at one time, in crops, as it were, require less

water at that period than at any other; merely enough to sustain the blossoms. Try to keep the pot soil in a condition of uniform moisture. Covering it with sphagnum moss will greatly assist in this direction. In keeping cut flowers, the water should be changed every twenty-four hours at least. If the living rooms are warm, stand the vases in a cool place over night. When changing the water, cut off from one half to one inch of the stem. The addition of a little charcoal in the vase will also help to keep the water sweet. For two reasons don't crowd too many flowers into one receptacle: first, because they will not keep; and secondly, because they will not look as well.

In forcing plants, the temperature should always be looked after carefully, for it is the means whereby we really govern the rate of growth of the plant. Don't think, because you can force a plant to bloom in eight weeks with a temperature of 45°, that you can make it flower in half the time with 90° of heat. The probabilities are that the plant would not flower at all, or, if it did, that the blossoms would be valueless. The particular temperatures mentioned below, I know to be those that will give the best results. Even though a variation of a few degrees may do

no harm, you will do well to keep the mercury at just the figure I name, if possible.

Vines and their products contribute quite a large percentage of the standard stock of plants, both flowers and greenery, with which our flower shops are supplied during winter. What would a winter wedding or reception be without cut strings of *Asparagus plumosus*, with its small fronds of dark green, that, with care, will keep for several weeks?

Ornamental asparagus is rather slow to mature, this being one reason why it is not grown in larger quantities. It takes nearly two years from the sowing of the seed to get a crop ready for cutting. The seed should be sown in the spring in a light soil containing some sand to prevent acidity, and in a temperature of 65°. When the seedlings appear above ground they can be placed in two-inch and later in four-inch pots, or else potted directly in the latter size, although this method necessitates more careful watering. In successive pottings, the plants can be gradually accustomed to a slightly heavier soil, although a little sand is always desirable. Kept in four-inch pots, the plants will need an average temperature of 65° until the following spring, when they will be ready for planting.

Although very satisfactory results can be obtained with raised benches, solid beds with a rich, but perfectly drained soil are best for *Asparagus plumosus*. A one foot layer of coarse gravel, shells, etc., will produce the latter condition, while the former requirement can be satisfied by adding to the soil one third its weight of good manure. The young plants should be set from nine inches to a foot apart each way.

To get good strings of foliage in winter, light is essential; in summer, the plants must be shaded to prevent burning by the strong sunshine. The best house is as much as twenty feet high, but nice, short strings can be cut in any house with six or more feet of head room.

Stringing is quite an important factor in growing this vine, and should be attended to as soon as the plants are set in the beds. An iron lattice should be made and supported horizontally so that the cross pieces will hang directly over the plants, and about an inch from the ground. Another trellis, corresponding with this one, should be hung near the top of the house, and strings run vertically between the two frames, one directly over each plant. When growing merely a few plants, all this is unnecessary; any contrivance that will keep the strings straight and directly

over the plants will do. The crop will be ready for cutting the winter after the plants are set out. In harvesting, try as far as possible to cut clean as you go, instead of picking out stems here and there. This permits you to withhold the water slightly over the cut area until new growth has started. Always cut the supporting string with the vine and replace it before the new growth is ready to climb. Strong linen thread may be used, and if green, will be less conspicuous. A bed of *Asparagus plumosus*, if properly prepared, will last from five to eight years and produce freely for the whole period, but at the end of that time it is advisable to pull out the vines and replant.

Of the several varieties, the best are *A plumosus* var. *nanus* with very full, flat fronds, and var. *tenuissimus*, a dwarf form, with light-green, feathery foliage. None of the members of this species is seriously troubled by insects. The cutworm sometimes does a little damage, but may be eradicated by going through the house at night with a lantern, when it can be easily discerned at work and destroyed.

The shiny green leaves and quick growth of the florists' smilax (*Asparagus medeoloides*) make it a very desirable vine for cutting. It can be

raised in about half the time it takes to mature the plumosus species. The seeds should be sown early in February and the young plants kept growing continuously in a temperature of 60° or 65°. They will be ready for planting in July. The soil can be prepared as for plumosus, and also the stringing arrangements which should be attended to early. It is best to replant smilax every year although plants can be kept over for two or even three seasons.

Smilax is troubled seriously by one pest, the red spider, but daily syringing will check it, while the water will be enjoyed for its own sake by the plants. If syringing is begun before the insect appears you are liable not to see it at all.

The long fronds of *Asparagus Sprengeri* are much valued for working in with flowers in interior, winter decorations. This species is also largely used as a pot plant, furnishing very attractive specimens. For cutting, the plants should be grown in solid beds, with conditions similar to those required by *A. plumosus*. Since the vine is more of a trailer than a climber the stringing can be dispensed with.

When growing *A. Sprengeri* in pots for house decoration, take care not to get the latter too large. The plant is a rank rooter and seems to demand

repotting rather often; but, instead of doing this, substitute liquid feeding, and get by that means, a nicely developed plant in a small pot.

A few years back, such a thing as a climbing rose for winter flowering was not dreamed of, but with the advent of the Crimson Rambler there came the forcing of climbing roses, and at present, the demand of the New York markets alone is for thousands of the forced blossoms. A mistake made by most growers is that they stick fast to the Crimson Rambler. It is a good rose, to be sure, but there are many good roses equally deserving of recognition and appreciation. Dorothy Perkins is a magnificent pink variety of the Rambler type; all the Wichuraiana hybrids are excellent for forcing. In fact, I have heard a great many people remark that they liked the single rose best for growing as a pot plant. Of course, the single rose is inferior for cut-flower purposes because of the falling of its petals, but all the roses described in Chapter XIII are splendid subjects for forcing. Go over the list, pick out the colours you desire, not forgetting to include two or three single-flowered varieties.

The details of forcing climbing roses are simple even for amateurs. The whole question of success or failure hinges chiefly upon the matter of

obtaining good wood for flowering. This may be done as follows: select the plants in spring and plant them in a *well-enriched* border. Reduce the number of leading shoots to four, cutting the others right to the ground. Keep the plants well watered so that they will make a good, heavy growth. Lift them in the fall after the foliage has dropped, planting them in suitable pots or boxes. Plunge these in some protected corner of the garden until you are ready to force them, covering the pots with manure to prevent injury by freezing or drying out.

The later roses are forced, the better crop of flowers you will get, but they can be brought in any time after January 1, and will flower in from eight to fourteen weeks according to the variety. It is best to start them with a night temperature of 45°, gradually increasing it until you have reached 60°. A little liquid feeding, before the flowers appear, will produce a better colour. Immediately the plants are brought into the greenhouse they should be pruned. Spur all the side shoots close to the long, heavy branches, and, instead of cutting these, tie them in, to give a well-formed plant.

Because of its beautiful form and colours, few plants can rank with the sweet pea (*Lathyrus*

odoratus) as a source of cut flowers. Because its merits as an out-door plant were so well known, it became doubly popular as soon as its forcing possibilities were discovered. It is now one of the most popular of all flowers in winter as well as summer, the plants being forced by the hundreds of thousands. The vine can be brought into flower at any time; if during December and January, you should obtain fine blooms not only for the entire winter, but well into the warm weather, although toward the end the flower stems will be rather short. Ordinarily, the stems of house-grown sweet peas are greatly superior to those of flowers grown out-doors, twelve to fourteen inches not being uncommon. Similarly, the blossoms are much larger and better coloured.

To have sweet peas for Christmas, sow the seed not later than August 20, in a solid bench where there is at least eight feet of head room, in a light house which has ample means for ventilation. Without these essential conditions they cannot be well grown. A good night temperature is 45°, but it must not go above this or the stems will be short. A lowered temperature means longer stems but fewer flowers; more heat means just the reverse. When sowing the seed, figure

on flowers in about four months, although this period can be reduced as we approach the more natural conditions of spring.

Pick sweet peas every day, as soon as they commence to bear, when, also, you should begin to feed them regularly with cow manure water. To make this, suspend a bushel of cow manure in a barrel of water and allow it to soak a couple of days. For the first two weeks dilute the liquid to half strength; after this, full strength will not be too rich, if applied once every four or five days.

Seedsmen offer for forcing under glass, special "winter flowering" varieties of sweet peas which should be secured for all greenhouse work. The seed of this strain is sure to give you earlier, larger, and handsomer flowers than will that of any out-door, standard varieties saved over.

In contrast with the upright character of most pot plants, the great, drooping, purple flower-clusters of the wistaria when treated as a house subject, have brought the plant into prominence and great popularity. The combination of the flowers and the grotesque though handsome foliage, produces a most pleasing specimen that will go far toward brightening any home during the dull, dreary days of winter.

Unlike other forced plants, wistaria should

not be planted out the summer previous to forcing, for it is then impossible to get its long, thick roots into a pot of practicable size. With any in-door plant, a small pot not only is more convenient, but also helps the appearance of the plant. We must, therefore, repot the wistaria during the summer, as occasion demands, supplying at the same time plenty of food, for all this while the vine is preparing the next season's crop. The plants are imported from Holland in large numbers each year, but there is no reason why any person should not grow and maintain his own. For a perpetual supply get a dozen or two small individuals of *W. brachybotris*, and keep them potted until large enough to force. After a plant has flowered, it should be given a two years' rest. For this reason, a number of plants forced in regular sequence will be necessary to supply flowers every winter.

A house with a night temperature of 55° is a satisfactory winter home for wistaria. Spray the plants three or four times each day for the first week, then gradually reduce the frequency of the sprayings until, by the flowering period, they are discontinued completely. When grown in pots, the vines require very little pruning, merely a shortening of the thin, straggling shoots. If

WHERE ROSES COVER HOUSES

On the Pacific Coast everyone can be a rose lover and a rose grower; and every home can be made a bower

The Wichuraiana roses are absolutely hardy. They excel for covering steep banks or draping rough walls

The Prairie Rose (*Rosa Setigera*) is a real climber but also becomes a beautiful irregular border for a path

given the proper conditions they will flower in from six to eight weeks.

A flower shop that is not well supplied with pot plants of clematis around Eastertide is behind the times. There are few plants that can surpass this beautiful vine when in flower, covered with its bold, bright blossoms of different hues. It is usually grown supported on a bamboo stake, but the time is not far off when you will see it trained to all sorts and shapes of trellis for winter decoration. Think of the effect of a clematis flowering over a balloon trellis!

The vines are imported from Europe by the hundred each fall, and, as the best results are obtained from grafted specimens, it will be wiser for you to buy a few of these, rather than to bother raising any yourself. The majority of the imported plants are of the *C. cærulea* type that flowers on the mature wood. Therefore don't really prune them, merely remove faded flowers and any undesirable wood at the same time.

Although the species is hardy, it will not stand the extreme severity of our midwinter months, so the plants must be stored in a deep cold frame or other protected spot until time for forcing. Any time after January 1, bring

the plants in to a night temperature of 50°, which can be raised to 55° when the first buds appear. With careful root-watering and occasional spraying, they will flower in from six to ten weeks, according to the variety and the date that they are brought in. The following varieties of the species *W. cærulea* (listed with a description of their blossoms) are a few of the best:

Stella, mauve, with a red bar down the centre.
Lord Lanesborough, a very early light blue.
Lady Lanesborough, a very early silver-gray.
Albert Victor, a good early lilac and purple variety.
Louis van Houtte, a pinkish-white, semi-double.
Monstrosa, a pure white semi-double.

The beautiful odour and wax-like appearance of the flowers of *Stephanotis floribunda* make them always popular. The plants can be had in flower for late winter by keeping them in pots trained to a trellis so that they can be placed in a warm house after January 1, and made to bloom in from four to six weeks. If you wish to start them earlier, you must begin to rest them earlier in the fall, say in September, then water them moderately and keep them cool that the wood may ripen thoroughly.

Another very fragrant flower and an old-time-favourite that can be had in flower for winter is

the sweet-scented jasmine (*Jasminum officinale*). But any of the useful and beautiful species discussed somewhat fully in Chapter XIV can also be made to bloom in late winter. At present, they are rarely seen outside of a few private places, but I prophesy that their effectiveness will soon carry them into the larger field of the florists' commercial activities.

The treatment necessary is the same as for stephanotis: dry off the plants in September, keep them cool and moderately watered until January, then bring them into a temperature of 60°, watering and spraying freely until the flowers appear.

The long spikes of curious, light-purple flowers, produced in overwhelming quantities, have retained *Bougainvillæa glabra* for years as a fixture in popular esteem. The long shoots are usually tied down, giving the vine an elliptical form, the lateral branches being spurred into one or two eyes. The treatment is the same as that just outlined, except that plants should be plunged outdoors for the summer. Feed them freely in early summer, but begin to dry them off in August. After a four months' rest they can be brought into the heat and will flower in from six to eight weeks.

One of the commonest and best of all vines for winter decoration is the English ivy (*Hedera Helix*). The dark-green foliage of this plant can be used for so many different purposes that I cannot understand why it is not more popular for cut greenery effects. I have used it for years in this connection and have come to prize it highly. Being rather hardy it is often used in window boxes for city houses during winter. Among the many forms to which it can be trained for the living rooms, the most common is the pyramid. To make one of these, set along the outside edge of a wooden tub, not less than a foot square, small ivy plants, as close together as possible. Drive a four-foot stake down in the centre of the tub and string wires from the top of it to the outside edge of the tub for the vines to climb. A fine specimen can be obtained in two seasons if you start with plants from three or four-inch pots.

CHAPTER XVII

Vines With Ornamental Foliage or Fruit

The several kinds of ampelopsis — Ornamental native grapes — Various annual vines that fruit — Vines that amuse children.

Foliage vines are especially adapted for stone or brick buildings, as they look more at home there than flowering ones. They are also valuable for working in with flowering vines with poor foliage, as in this way you get the benefit of a good background, formed by the foliage vine. Then again, no other class of vines gives such good autumn colours. Foliage vines can be pruned at any time of the year, but spring is the best time for transplanting them. They should have a good, rich soil if they are to produce a luxuriant growth.

Hardy vines which bear ornamental fruit are almost as good as evergreens, for producing a fine winter effect. In fact, one of the best winter effects I ever have seen was a combination of the English ivy and the bitter-sweet. The dark green of the ivy, formed a grand background for

the curious little orange-scarlet seed pods of the bitter-sweet. All the woody, ornamental fruiting vines, mentioned below, flower on new wood and should therefore be pruned moderately in early spring. This is also the best season for transplanting them.

Because of their value as free producers of fruit, I have included a lot of annual vines under this heading. They are far too little used. Miles of bare fences might easily be made attractive by putting a spadeful of manure at each post and sowing a few seeds of gourd or some good, annual, fruiting vine. The gourds are capital for children to play with, if gathered after frost and brought into the house.

For its leaves, which turn to the most enchanting shades in fall, and for its extreme hardiness and durability in large cities — where other vines would not persist — the ampelopsis is the best of all foliage vines. All kinds of ampelopsis are good, thrifty growers, and, if properly planted, will require little, if any, further attention. Being self-clingers, they are among the very best vines for stone or brick buildings, sticking with great tenacity and never getting blown from the object they are growing on. They are not fastidious as to location. They will grow well

in full sunlight, but semi-shade, or even a northern exposure, brings out the best colours in autumn, and when the foliage does turn, one might imagine that a gang of painters were working day and night. Ampelopsis requires no pruning other than cutting the vines away from windows and doors. Although it responds readily to good soil, I have seen varieties growing quite well in plain beach sand, clearly illustrating the versatility of the plant. Young plants can be raised by layering.

Because of its extreme hardiness and its beautiful autumn foliage, the Boston, or Japanese, ivy (*Ampelopsis tricuspidata*), although of recent introduction, is the most popular member of the family. It is really remarkable the way this plant thrives in large cities, where the dirt and smoke are almost invariably very harmful to plant life. The fall colouring is enchanting, shifting from green to the various shades of yellow, orange-yellow, orange-crimson, and crimson. Some leaves are even blotched with pure white.

This vine clings by means of discs, and is a very vigorous grower. It would be hard to fix a limit to its height; it has been found growing on church spires over one hundred feet in the

air, and still ascending. The profusion of small, blue-black berries adds to its attractiveness in the fall.

By reason of its suitability for use on frame buildings, to which it clings, with long, straggling shoots hanging down in great festoons, the Virginia creeper (*Ampelopsis quinquefolia*) is a valuable foliage plant. It is also a good plant in the fall, as the berries, always freely produced, are very attractive. Although this plant will cling to frame structures, it holds better if a little poultry wire is stretched over the object to be covered, in which case the disc-bearing tendril clings to the support. If this help be given, the vine can also be used on stone or brick buildings. Although a grand summer vine, with its dark-green foliage, it does not colour up as well in the fall as the Boston ivy, although the foliage does turn a beautiful shade of red.

There are numerous good varieties of this vine, differing more or less in minor points. *A. quinquefolia* var. *radicantissima* is of closer-growing habit than the type. It is the loose, straggling growth of the Virginia creeper which to most persons is so pleasing, and yet some may like this other variety. A good variety for planting beside a green-leaved vine, where the glaucous

foliage stands out very prominently, is var. *murorum*. A very dainty little variety, with small leaves and especially valuable when a good fall colour is desired, is var. *Engelmanni*, a new variety, and a valuable acquisition. A good variety with very shiny leaves, especially adapted for planting on dark-coloured buildings, which bring out the contrast, is var. *latifolia*. The best autumn varieties of this species, with foliage remarkable for their colour, approaching very closely to the Boston ivy, are var. *Græbneri* and *vitacea*. Both are valuable and bear an abundance of blue-black berries, which stay on the vine most of the winter.

A grand vine for damp, shady locations, where the best colours are brought out in the fall, when its clusters of berries of a peculiar bluish tint are also very attractive, is *A. heterophylla*. This is a very vigorous grower, and is closely allied to the grape.

For a screen, when a heavy foliage is desired, few vines will compete with the Dutchman's pipe (*Aristolochia macrophylla*), with its enormous, dark-green, sombre leaves which are attractive all summer. This vine is a good, vigorous grower. It never is troubled with insects or disease, and if given a good soil and abundance of sunlight

it will attain a height of fifty feet, or even more. The plant is also a good twiner, and will climb any suitable support. It is especially good for mixing in with other small-leaved vines that will grow in some shade, since the large leaves stand out, leaving the small-leaved forms close to the support, thus making a good foliage combination.

For lamp posts or dead tree trunks in sunny positions, the small, dark-green foliage of the silk vine (*Periploca Græca*) is very ornamental. The peculiar brownish-purple flowers produced toward the end of July are also attractive and very fragrant. This vine does not look so well when growing on screens, for the small foliage is not then seen to advantage; but on an upright support it is very showy. It is a good twiner, a vigorous grower and will attain a height of fifty feet. It does best in a good, sunny location and a rather light soil. The narrow leaves of *P. Græca* var. *angustifolia* are preferred by a great many people; in other particulars the plants are identical.

Where a heavy, dense planting is sought, few vines will give such a rough, natural tone to a situation as the frost, or chicken grape (*Vitis cordifolia*). This is a very tall grower and in shady places will persist and grow upright until

it eventually reaches the light, even if the distance be one hundred feet. The berries are numerous and small; the foliage is woolly underneath, and, when it turns in the fall, makes a grand display. Another excellent variety is the fox, or skunk grape (*V. Labrusca*). This variety is likewise a tall grower and also will exceed one hundred feet. The berries, which are a rich, amber colour, are larger than in the former variety, but not so numerous. There are a great many varieties of the wild grape which make attractive decorative vines. They are all very hardy, require no attention other than planting, and are all good plants for autumn colour effects.

For a quick effect, such as a screen, or in covering buildings where speed is the principal consideration, few vines can approach the Kudzu (*Pueraria Thunbergiana*). This vine will cover a building fifty feet high in two years, and, after it is once established, will grow as much as sixty feet in a single season. It is generally classed as an herbaceous perennial, killing to the ground each winter in the latitude of New York, but that is erroneous. On the south shore of Long Island with a southern exposure and absolutely no protection, it stood the heavy winter of 1903-04. Every spring it sends out good, strong shoots

that, before the end of the season, grow to the height of the building it is trained on. This plant demands sunlight. The foliage is a good green, but it succumbs to the first frost and you don't have any autumn colours. It is easily transplanted, and young plants can be raised by layering.

With its curious little berries in fall, and fine foliage through the summer, the bitter-sweet (*Celastrus scandens*) surpasses most vines, and deserves to be cultivated more generally. It is an especially good plant in semi-shade, its foliage being remarkably pretty, with the body of the leaf dark green, and the rim and outer edge tinted brilliant scarlet. The flowers, also, are quite pretty, but are so hidden by the foliage that you must get close to the vine in order to see the little clusters of white and black-centred blossoms. But it is after frost that the real merits of this vine show up; after the foliage has fallen, it is one mass of curious little scarlet berries, with a reflexed outer covering of orange-yellow, both colours showing to advantage.

The bitter-sweet is a good twiner and a great grower, easily reaching a height of thirty feet. It is never troubled with insects or disease, and, on the whole, is the best of all hard-wooded

vines with ornamental fruit. Two good forms are *C. orbiculatus* and its variety *punctatus*. Both resemble *C. scandens*, but the latter is of looser growth and shows the flowers to better advantage. The pruning of the bitter-sweet should be done in early spring; it will stand a good cutting if flowers and fruit are desired, but for foliage, prune less severely.

A good ornamental, fruited vine for extremely sunny situations, but one useless in the shade, (where it is always covered with mildew) is the matrimony vine (*Lycium Chinensis*). This is a good grower and the small red berries are produced in abundance along the long, thin, drooping, lateral branches. It is a twiner, but a poor one and needs assistance. Flowering as it does on new wood, it should be pruned close in early spring.

Do not plant the matrimony vine for foliage, as it is too susceptible to mildew. Aim for the production of the little scarlet berries, which are very attractive in late summer and early fall. It can be transplanted in spring or fall, or young plants can be raised by layering. There are two other species, Richii and horridum. They are similar to Chinensis, but have nothing to especially recommend them.

An admirable annual vine for foliage is the gourd. It is especially fine for covering fences, for in the fall, after the leaves are gone, the fruit is decidedly ornamental. The gourd (*Cucurbita Pepo*, var. *ovifera*) is fine for all kinds of effects where an annual vine can be used. The foliage is a good shade of green and, setting very close, will conceal any object; and with astonishing rapidity. Another good trait in regard to its cultivation, is that it does not seem to show the effects of either excessively dry or wet weather, but keeps growing until checked by frost. The attractive fruits of the gourd are used for a great many purposes other than to amuse children. The large ones are converted into flower vases, and the small ones used as ornaments. All are of various colours and shapes, some beautiful and some grotesque.

The gourd climbs by means of tendrils and can ascend almost any kind of an open-work fence. In sunny locations it attains a height of ten to twelve feet. The seed should be sown in the greenhouse in March, or out of doors toward the end of April.

A plant closely allied to the gourd, and useful for the same purposes, is *Coccinea cordifolia*. Its ornamental fruit, of a vivid scarlet colour,

makes it a good companion vine for the gourd. The culture of both plants is the same.

Because of the inflated seed sacs, that give it its name, *Cardiospermum Halicacabum* is a great favourite with children. It is a fairly good foliage plant and in a good, sunny location it is worth a trial, especially if there are youngsters around to enjoy it. This vine is an annual and very tender; therefore the seed should be sown in the greenhouse about the middle of March and the plants set out in permanent quarters the middle of May.

A good vine for verandas or shady spots, producing clusters of small, white, star-shaped flowers in profusion, is the oak-leaved climber (*Melothria punctata*). This plant has small dark-green leaves and is a very vigorous grower. It will run up fifteen feet or more in a season. The flowers are followed by attractive fruits, similar to gourds, but of a brownish colour. It is a tender perennial, but is usually treated as an annual in New York and similar latitudes, in which case the seed should be sown not later than March 15. If desired, the tops can be cut and the root stored for the winter, then planted out the following spring, in the same way that dahlias are handled.

The curious, little, cherry-shaped fruits of

Bryonopsis laciniosa are very attractive in their skins of pale green with white markings. They are very freely produced, but only when the plant is growing in a very hot, sunny location. B. *laciniosa* var. *erythrocarpa* has red fruit and white markings. In order to make these heat-loving plants fruit well, the seed should be sown in the greenhouse, not later than March 15, and the young plants not set out before June 1.

A curious fruiting vine, also for a very hot, dry location, where it will grow and fruit with freedom, is the balsam pea (*Momordica Charantia*). The fruit of this plant is oblong, very rough on the outer surface and of a yellowish colour. It is even more attractive after maturity, for the seed pod then bursts, showing the carmine centre. It is a tendril bearer, but, though a good grower, a dwarf, seldom growing more than six feet. Similar to it is the balsam apple (*M. Balsamina*), differing only in the formation of the fruit. Both these plants can be raised from seed in the same way as previously directed for annual vines.

If you wish to furnish the children, and perhaps the grown folk, with some amusement, grow the squirting cucumber (*Ecballium Elaterium*). This

A GRAPERY IN FRUIT

Grapes may be grown in the same house with other plants that can stand some shade. Support the vines well. Their wealth of fruit makes a heavy burden

Support the bunch on a small stick to avoid destroying the bloom

And remove from one-third to one-half of the berries

An unthinned bunch

A bunch that was thinned

THINNING GRAPES

vine throws its seeds at a person upon the very slightest touch. In fact, it will sometimes do so at the mere vibration of the ground caused by a person walking near it. In foliage and general make-up it greatly resembles the cucumber. Usually it is treated as an annual; it should be trained to a fence, and, although there are other plants better for foliage, its curious habit recommends it.

Another great favourite with children is the wild cucumber (*Echinocystis lobata*). It has prickly, inflated vessels, which the children love to burst, but it is also useful as a quick screen, for it is a very rapid grower. Its value, however, is marred by the fact that its leaves turn brown very early. The vine is an annual and should have the same treatment as is given to others of that class. With plenty of sunlight and in rich soil its height is twenty feet.

CHAPTER XVIII

The Grape

The grape industry — Greenhouse grapes for quality — The construction and care of a grape house — Growing grapes in-doors — Insect enemies and diseases — In-door varieties — Growing grapes out-doors — List of varieties.

Because the fruit is useful in so many ways, and because the plant itself survives and yields in so many and such varying climates and soils, the grape (Vitis) is the most common and most universally grown of all fruits. As an ornamental, too, it should receive some consideration, for it is a rapid grower, even under remarkably poor conditions, bears handsome green foliage, and responds more readily than almost any other plant to good treatment. The conditions most conducive to its success are good, rich soil, free drainage, an abundance of water, and sunlight.

To get some idea of the magnitude of the grape-raising industry it will be necessary to review a few figures. The average annual production of grapes is about 80,000,000,000 pounds;

of this quantity about 40,000,000,000 pounds are used in the manufacture of wines; about 28,000,000,000 pounds are used dried, as raisins; and the remaining 12,000,000,000 pounds are consumed in the fresh state. The greater part of this latter quantity comes from vineyards, where a point is made of growing the best possible table grapes. But the product of no vineyard can compare in quality with the grape grown under glass. We will, therefore, first confine our attention to the hothouse grape and its culture.

The European grape (*Vitis vinifera*) is the form most grown under glass, for, although it will stand considerable frost, it is not as hardy as our American grape (*Vitis Labrusca*). It is also capable of higher development both in size and quality when given protection and heat than is our native species.

It used to be the prevailing idea that a small lean-to house facing south was the ideal house for grapes. Then there was developed the three quarter span house, planted back and front; but as the darkness interfered with the proper ripening of the fruit along the back wall, this type was not found satisfactory. The approved form at the present time is an even-span house

with low gutters and a long reach from gutter to peak. Houses are run in both directions, but I prefer to locate mine along a north and south line, in order to distribute the light more evenly. The house should be well piped for heating, especially if the fruit is required early and forcing is resorted to. Never build a house without at least one pipe, since this is necessary in preventing and combating mildew. If the house is twenty feet wide and twelve feet high at the peak, it should carry four four-inch flow, and six four-inch return pipes. These will give ample heat at all times, especially if they are divided, half running along each side of the house.

The grapery should be freely open to the light with no trees near enough to cast any shade on it. The house should also have provision for abundant ventilation. This is best allowed for by two top and two bottom ventilators. There is rarely occasion to open all the ventilators at once, but it is always advisable to ventilate from the side opposite to the wind, which cannot be accomplished if the ventilators are on one side only. Mildew is ofttimes the result of faulty ventilation. The grape house should also be supplied with a water faucet and an unlimited

supply of water, available at all times. In locating the grapery, avoid low-lying situations, for the grape, although requiring an abundance of water, must have good drainage. In case you are compelled to locate your grapery in a low spot, raise the border about four feet and the rest of the grapery correspondingly.

The grapery border should be well enriched, and may be prepared in the following manner: first, remove the earth to the depth of four feet. In very wet places concrete the bottom and arrange to carry off the water through tile drain pipes. Ordinarily, a foot of broken bricks, bones, or similar rough material will suffice. Next, fill the border with chopped sod from an old pasture lot, or some other good fibrous loam; to every five parts of loam add one part of good manure, and to every five loads of loam, one bag of coarse, crushed bone. Use the coarser grade of material in preference to bone meal which is too fine and too rapidly assimilated. In heavy, sticky soils, add one bag of lime for every bag of bone used. It is to be understood, of course, that the border should be prepared both inside and outside the house. An outside border is a strip of ground adjoining the grapery, prepared in the same way as the interior border;

its width is optional, but should not be less than six feet nor more than fifteen. I like the narrow (six-foot) border for an early grapery, because it can be covered with sash, and the outside roots started into growth more quickly than in the open. The fifteen-foot border is large enough for a late grapery. The border should be protected from the intrusion of the roots of uncultivated plants by a brick or concrete wall, while the foundation walls of the grapery should be arched below the surface of the ground so as to permit the grape roots to travel into the outside border.

The crowns should be planted four to five feet apart. Wires to which the vines are subsequently trained should be stretched some fifteen inches from the glass. The best kind of trellis runs up and down allowing five horizontal wires for each cane, about nine inches apart for grapes planted four feet apart, and about twelve inches apart for grapes set every five feet.

Vines can be started into growth at almost any time, but the later in the season it is attempted, the easier the task and usually the better the results. In starting the grapery, a temperature of 45° should be maintained for a few nights. Water the border thoroughly and spray the canes

several times every bright day with water at least as warm as the temperature of the house. Advance the heat five degrees on dull days and spray twice, morning and afternoon; on bright days you can allow the temperature to run up ten or even fifteen degrees, at which point you must open the ventilators slightly.

If, at any time, a cane shows an inclination to bud out from the top, you must tie it down, bending it in the middle. This prevents the rush of sap to the end of the cane and forces the bottom eyes to bud out first, when the cane can be replaced. The upper eyes will soon catch up to the lower ones.

The temperature should be gradually advanced, say about three degrees a week, until the buds break, at which time a temperature of 55° is necessary, if you have not already reached it. Spray on all bright days and take every precaution against draughts which are particularly dangerous after growth has started.

At this time select the shoots that are to grow, and rub off the others before they appropriate a quantity of the plant's nourishment; choose one side shoot for every twenty inches or thereabouts of cane. In the case of young canes, allow the leading shoot to grow straight ahead.

After growth has fairly started, the temperature should again be gradually increased, until, by the flowering period, 65° has been reached. The vines should be sprayed three or four times on bright days, and the atmosphere kept humid by closing the ventilators early (until the time of actual flowering, when the grapery must be kept dry to facilitate the fertilizing of the flowers). This shuts in as much natural sun heat as possible. Even if the temperature runs up to 90°, as a result, it will do no harm, providing the air is charged with moisture. However, the house should be free from excessive moisture by night, hence it is not safe to spray after three o'clock in the afternoon.

Before the flowering period is reached, some pinching is necessary. As soon as possible pinch the side shoots at a point two leaves beyond the bunch and remove the tendril opposite the bunch. Do not neglect this until you have to use a knife; the growth should be so small that the tip can be readily severed with the thumb and forefinger. At this time, all superfluous bunches should be removed, only the best looking spikes being allowed to remain. Of course, the probable size of the crop governs the number of spikes to be removed. Estimate the crop on the basis of the flowering, allowing that about

$33\frac{1}{3}$ per cent. of the blossoms will mature. In this first thinning, leave double this quantity; for instance, if the crop is estimated at ten bunches, leave twenty at this time. The other ten can be removed later, five of the poorest after the flowering period, and five more after the stoning period.

As the shoots grow upright it becomes necessary to tie them down. The beginner often makes the mistake of pulling them down too much at one time, causing them to break at the spur. The proper method is merely to bend down the tips, using raffia or some soft tying material, so that they do not hit the glass. They can then be pulled down gradually, until, when the grapes are thinned, the shoots are in the correct horizontal position.

When the grapes are in flower, a somewhat lower temperature and drier air are desirable. Keep the house at 60° at night and withhold all water, except when growing late-forcing and free-setting varieties like the Black Hamburg, in which case the walks and borders can be sprayed twice in the daytime. Most varieties require a good, dry air at this period of the fertilization of the flowers. Ordinarily, a gentle tap on the cane will make the pollen fly, and alight on the

pistillate blossoms, but a few, more particular varieties call for special treatment. The use of a soft, camel's-hair brush is often resorted to, but the best practice is to go into the grapery at midday when the air is very dry and gently run the hands (which should be free from all perspiration or other moisture) over the flowers. Pollination is an operation that should not be neglected, for the period when it can be done is short; one week after the flowers open they have closed, and if not properly fertilized, will never mature. Throughout the fruit-setting period try to keep the upper ventilator open a trifle, balancing the cool air with additional fire heat. At all events, make it a point to secure a good set. The border should always be given a thorough watering just before the flowers open; this will carry the vines over until after the fruit has set.

When the fruit has set, the temperature can again be advanced gradually, until 65° is reached. Some prefer 70°, but keep close to these figures, never letting the night temperature fall below 65° nor rise above 70°. Continue gradually pulling down the side shoots. From every leaf axil there will start a young growth or lateral. This should be constantly pinched to one leaf, never allowing it to attain any size. It will be

necessary to go over the canes every other day to keep down these laterals. As quickly as this pinching is accomplished, new growth will start from the axil of the one leaf that is left; this should be headed back to a one-leaf shoot in exactly the same way. Some growers advocate removing the entire lateral, between the bunch and the main cane, claiming that it produces larger fruit. I have tried both methods the same season, but have been unable to perceive little, if any, difference. If there was any whatsoever, it was in favour of the latter method. But in removing the laterals, be sure to leave the two beyond the fruit, for the sap of the plant must pass through the foliage to be prepared by the sun's action before its final assimilation in the grapes.

Continue to keep the house charged with moisture at all times, spraying the walks and borders four or five times on bright days and closing the ventilators tightly about three o'clock. The sun's heat will be sufficient until evening, when steam should be turned into the pipes. Whenever the heat from the sun is sufficient to maintain the right temperature, the pipes need not be used. During our hot summer weather, I always syringe the vines several times a day as

a precaution against the red spider. In spite of the fact that some growers advise against this practice, claiming that it destroys the bloom, I am heartily in favour of it. I have seen as fine bloom on sprayed as on unsprayed berries, and do not believe that any harm results from the syringing.

Don't, under any consideration, allow the vines to become dry at the roots. There is no set rule as to watering, but with a well-drained border it is difficult to supply too much moisture. A good way to test the condition of the soil in the border is to plunge a small crowbar into it; some of the earth will adhere to the bar when it is withdrawn, and may then be judged as to its need of water.

When the berries are about the size of small peas, it is time to thin them; that is, to remove a percentage of the berries and allow more room for the better development of those remaining. The weight of the bunch is approximately the same in both cases, but the result of thinning will be fewer berries, two to three times the size of those on the unthinned bunch, and far above them in quality, for which we are especially striving in in-door grape culture. In aiming to develop a symmetrical bunch, it is necessary,

with most varieties, to remove about one third of the berries. Most of these must be from the inside of the bunch; some may have to be from the outside. With some of the larger berried varieties like Gros Colman it will be best to remove even fifty per cent. of the bunch. By leaving too many berries, you not only lose quality in the fruit, but also do injury to the vine. In thinning, use a pair of long, pointed scissors and a small, forked twig. The berries should never be handled, and the shoulders should be supported away from the body of the bunch; all really small shoulders should be cut off entirely.

About a week after thinning the berries, remove all the extra bunches, basing the number of bunches left for the crop upon what the vine can carry. I claim that a well-established vine can bear one bunch for every foot of cane. Some growers consider this too much, but if the soil is rich, and all other conditions are right, I am convinced that a healthy cane can easily stand it. I grew, last season, on a cane sixteen years planted, somewhat more than one bunch to every foot of cane and obtained a very satisfactory crop. The age of the vine is an important factor in cropping; never let a cane bear until it is

three seasons planted; then, for the next few years, guard carefully against over-cropping. It is well to go over the bunches with your thinning scissors after the berries are pretty well along, clipping out any that are cramping their neighbours. Keep in mind the fact that in a well-finished bunch of grapes, every berry should show, and all should be of the same size and colour. Neither a loose nor a crowded bunch is desired, but rather one just comfortably filled with berries as nearly perfect as possible.

After thinning, continue the treatment as before — plenty of moisture at all times, a temperature of from 65° to 70°, frequent stirring of the surface soil, careful manipulation of the ventilators, and persistent pinching of the lateral growths. A draught of cold air at this time will do a great deal of damage. I make a practice of giving the vines fertilizer of some kind once every fortnight. If the border is top-dressed with Thompson's vine manure, icthemic guano, or some other good fertilizer, just before being watered, the plant food is quickly carried down to the roots. Liquid feeding can also be practised with a solution of cow or sheep manure. The important point is not to let the vines want for food. If you find the young roots coming to the

surface, it is a good sign; you are on the right track, so keep right on feeding and watering.

The ventilators on the grapery should be kept closed at night, but should be opened in the morning as soon as the sun strikes in and the temperature starts to rise. When 75° is reached, begin to spray, lest a dry atmosphere burn the plants. During wet spells, when a house is apt to become damp and cold, maintain a good fire heat so that you can safely keep the ventilators open an inch or so. To prevent mildew, paint the pipes occasionally with flowers of sulphur mixed to a paste with water.

When the grapes show colour, the conditions should be changed greatly, although gradually. Stop all spraying, and lower the temperature, but look out for mildew, and avoid sudden changes. The laterals can now be let run, as the growing season has about terminated; water should be withheld from the border as much as possible; no fire heat should be supplied except in dull, rainy weather; air should be more and more freely admitted, until, by the time the grapes are pretty well coloured, the ventilators are kept wide open all day and partially open at night. Let the air be dry and bracing at all times.

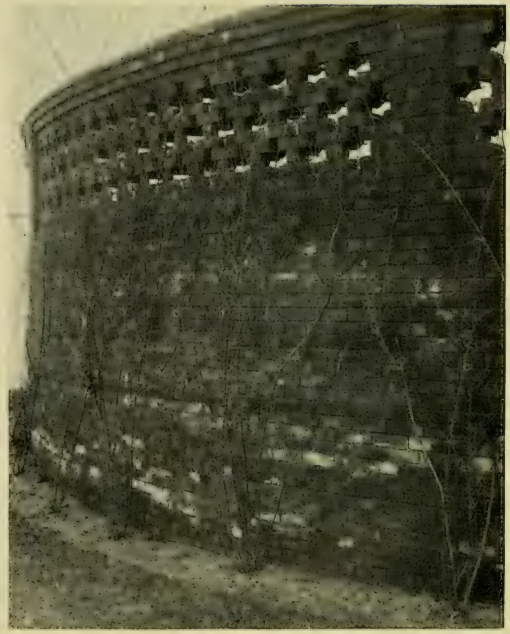
Bees sometimes bother ripening grapes and

call for special precautions. I have seen mosquito netting tacked across the ventilators to bar their entrance, but this is a mistake, as it keeps the house hot and stuffy so that occasionally the berries rot. Another plan, if the bees are wild and merely occasional visitors, is to place here and there in the house, honey with lead arsenate boiled into it. But I should not advise this either. In the first place, certain states have laws against killing bees; in the second place, where hives are kept it is neither a fair nor a desirous procedure; and, in the third place, there are many reasons as important as the grapes why we should not kill bees at all. Our only other resource is to enclose each bunch in a bag made of loose-mesh mosquito netting. Make the bag large enough so that it will not touch the berries.

On the average, a forced crop of grapes should be ready for use about five months after the starting of the canes; but if growth is allowed to start naturally in the spring, the grapes will be ready in about four months. The ripe grapes will keep better on the cane than anywhere else, so that one grapery, if properly handled, should supply a family for three or four months. In gathering grapes, always cut with each bunch a small piece of the side shoot; it does not harm

Clean the canes thoroughly between crops. Insects must be kept out at all hazards and this is the best time to fight them

CLEANING THE GRAPERY



Except for the evergreen species roses are hardly beautiful save in summer

But *Clematis paniculata*, well located, maintains a charming, fluffy effect even in winter

THE WINTER ASPECT OF TWO CLIMBERS

the cane in any way and greatly improves the looks of the bunch.

After harvesting is completed, while the vines are resting, the soil should be kept moderately dry, and the temperature slightly cool. Prune the vines immediately after the leaves fall, leaving only one or two eyes, which will be found on the first eighth of an inch of wood. Paint the cut ends with white lead or shellac to prevent bleeding; if a spur bleeds after starting, burn the end with a red hot iron. After pruning, thoroughly clean the vines, scraping off all the old bark, but carefully, so as not to dig into the green wood. If you have mealy bugs in the grapery, first paint the canes with wood alcohol, being careful to keep it away from the young eyes; then fumigate with double strength hydrocyanic-acid gas, using two ounces of cyanide of potassium, four ounces of sulphuric acid, and eight ounces of water to every 2000 cubic feet of space. Directions for its use will be found in Chapter XIX.

After the canes are scraped, they should be painted with a good insecticide, Gishurt's Compound, for instance, as a preventive. Then remove about two inches of the top soil in the border, sprinkle the new surface with some good fertilizer (bone preferably), then replace the old

soil, with some good, turfy loam and manure in equal proportions, mixed with it. This brings us again to the starting point, after having surveyed the treatment for an entire year.

The principal insect enemies of the grape are the red spider, the mealy bug, and the phylloxera (concerning which, see Chapter VI). The former should never be permitted to gain access to a grapery, nor will it if the house is kept charged with moisture. Obviously, the remedy is spraying the leaves with water. Since this cannot be done when the fruit is ripening, a sharp lookout must be kept previously; the first leaves attacked should be immediately removed and burned.

The mealy bug, once established in a grapery is a very troublesome pest and hard to eradicate. It lies perfectly still and usually unobserved until the fruit begins to ripen and the house is dried off. Then it gets to work, laying eggs in the bunches and spoiling their attractive appearance. Persistent, thorough care is essential if you hope to eradicate the insect. Fumigate with the gas as recommended above; paint the canes with sulphur several times while they are dormant; stuff up the old pruning holes in the canes with cement or grafting wax; and go over the vines, as soon as the bugs commence to roam,

brushing them into a can of kerosene. To keep them out of the bunches, wrap loose bands of cotton around the shoots on each side of the bunch. Although the mealy bugs cannot crawl over the cotton, their friends, the ants, can carry them over it. To destroy these accomplices, place small pieces of raw meat in the house and every day drop them into kerosene. This may seem a lot of work, but any one who has fought mealy bugs for the possession of a grapery will understand the necessity for it.

The worst disease of the grape is shanking, in which the berries dry up and drop from the canes; sometimes it is but a few berries, sometimes a whole bunch, and occasionally the entire crop. It is caused by over-cropping or some constitutional weakness resulting from improper treatment, such as cold, wet borders, too sudden changes of temperature, etc. There is no remedy after the disease has started, but efficient preventive measures consist simply of care and good management, as outlined earlier in the chapter.

Careless handling of the grapery, such as letting the atmosphere get very hot and dry, or leaving the house closed too late in the morning, may also result in sunburn. A less serious disease, or, rather, undesirable condition is indicated by

the appearance of adventitious, or air roots along the main cane. These denote a desire on the part of the plant for something it needs but is not receiving; the ground roots may not be in a condition to supply the tops with food, or a cold, sour, or impoverished border may not supply sufficient nutrition. Occasionally, though very rarely, these roots result from overheating and excessive moisture. Although they indicate poor health, they should not be removed; they will dry up and die when the wood is ripening. I have already described the preventive measures against mildew. Do not neglect to practise them rigorously, for the disease is very troublesome when once started.

Splitting is a disease, sometimes the result of not thinning the berries, and the subsequent crowded condition, but more often caused by an overflow of sap into the bunches, resulting in a cracking or splitting of the berries. The best cure for this is to cut, with a sharp knife, about half way through the shoot between the affected bunch and the main cane. This usually reduces the flow of sap sufficiently; but if the berries continue to split, cut a little deeper.

Being easiest to grow, the Black Hamburg is the most common variety of greenhouse grape.

It is medium in size, of good, black colour, and with fairly good bloom. The best late grape, a monster in size, with a remarkable bloom, is the Gros Colman. Berries of this variety frequently measure over four inches in circumference. A particularly good keeper among the black grapes is Alicante, very juicy, with a thick skin. The variety that produces the largest bunches is Barbarossa. The berries are small, but clusters of this grape have been grown that weighed twenty pounds and over. Other good black grapes are Gros Maroc, a late variety similar to Gros Colman, and Lady Downe's seedling, a good, late keeper, and very free setting. The best Muscat flavoured grape among the blacks is Madresfield Court, an excellent variety, but very exacting and hard to grow well.

Among the white grapes, the beautiful golden colour and sweet flavour of the Muscat of Alexandria makes it the best known and most popular variety. Another good white that will stand a trifle more hardship than the former, and that bears long, graceful bunches of almost round berries is Auvergne Frontignan. A grape of grand quality but a poor setter is Canon Hall Muscat. This is no grape for the amateur to grow; but for the professional, who is in and

about his house most of the time, it supplies a beautiful white grape of the sweet Muscat flavour. Another popular white grape is Foster's Seedling, which, although not of the Muscat type, is of good flavour. Syrian will stand a lot of neglect, and still bear good-sized bunches of white grapes, but the choice flavour of any of the other varieties named is lacking. Still other good varieties are Alnwick Seedling, black; Angers Frontignan, purplish-black; Ascot Citronelle, a very early, pale-yellow Muscat; Golden Hamburg, a large, yellow variety; and Muscat Hamburg, a richly flavoured, but poorly coloured grape. There are hundreds of other varieties, but the foregoing list includes all those most desirable.

Grapes of the hardy type (*Vitis Labrusca*) can be grown out-doors in almost any location, but to fruit well they must have a good, sunny position. The important points in out-door grape culture are pruning and training. Keep in mind always, that the grape produces fruit on small spurs or shoots which develop each year on mature wood that grew the previous year. In other words, fruit is borne by the last year's canes, but *on* new growth. In pruning, therefore, we must be careful to leave some of this last year's

wood from which the bearing spurs will arise. The main reasons for pruning are, first, to reduce the bearing area, and, second, to head back the growth into those shoots or bunches where we desire the greatest amount of energy and food material. The details of reducing the bearing surface are identical with those for indoor grape culture given in an earlier part of this chapter.

We occasionally come across old grape vines straggling over out-buildings, fences, or trellises, beautiful to look at and gracious in the shade they offer, but practically worthless as fruit producers. If we desire them to fulfil this latter mission at the expense of some of the beauty and the shade, they can be pruned back to a state of activity. Do not be afraid of injuring the vines. Cut them back one half, three quarters, or even right to the surface of the ground, depending on the degree to which you want to make them produce returns. Do this any time through the winter or in the spring, before the buds start. After this pruning, new shoots will start forth which you should let develop to a convenient length before pinching them back. You may let a few laterals grow to make a well-balanced vine. This first year there will be no fruit, but the following spring the shoots that you have

left will send forth spurs, each of which should be pinched back so as to produce not more than two or three bunches.

The different systems of training grapes are associated with the kinds of trellis used. Perhaps the simplest trellis, although involving a little extra work, consists of two posts or stakes from four to seven feet high, driven firmly in the ground on opposite sides of each vine. Let two shoots develop and tie one of them to each post after they have grown to a convenient height. The next season, while these are producing fruit spurs and bearing fruit, let two other stems develop in the same way and tie them, each to a post. These will bear the following year, while the former pair of canes will be developing new spurs to replace those that bore and were then removed. By keeping these four canes a definite length, and tied to the posts, you will get a continual supply of grapes by the alternate bearing of each pair.

The preceding method is chiefly adapted to the home garden where there are but two or three vines. Another system of training, found only in the home garden and becoming rare even there, is the training of grapes over arbours or lattice-work frames about door-ways. This system is

often practised with an idea of the æsthetic value of the vine, although by intelligent pruning and pinching back, an attractive vine can also be made profitable. On a commercial scale, neither of these supports is advisable, but rather the continuous wire trellis.

The more common wire trellis is built by simply stringing one to three wires on strong posts set firmly in the ground every twenty or thirty feet. The method of training practised on such a trellis, involves what is called the renewal system. In this we let one or more branches develop the first year to bear fruiting spurs the second season. While these latter spurs are developing, we start an equal number of main branches in an opposite or symmetrical direction, these to produce fruiting spurs the next or third season in the life of the vine. Each alternate year one set of main branches is cut back to the stem or crown of the vine, while the other is allowed to make growth for the next year.

Differing but slightly from the foregoing system is the system of renewal by means of spurs. In this method, a number of shoots are trained or tied to the wires and are left permanently, the fruiting spurs being renewed from year to year, the old ones being cut off as soon as they have

borne. There are adherents to both these systems, and there is really little to choose between them except on a basis of personal opinion or preference.

The other kind of trellis referred to, is associated with the horizontal or drooping method of training the vine. The details are practically the same, except that the supporting wires are fastened to horizontal crossbars nailed to the posts and the shoots are trained over these and not tied up to them. The bunches hang down on the under side of this trellis whence they can be picked with a considerable amount of ease.

There are varieties suited to almost all regions, climates, and local conditions. Some are distinctly adapted for southern conditions, while others are hardy even in the northern parts of Michigan, Maine, and New York. For the greater part of the United States, the following is a short list of the best varieties of the three main types: Concord and Worden, black; Catawba and Delaware, red; Niagara and Winchell, white.

CHAPTER XIX

Other Vines That Are Useful

Growing "quality" tomatoes in the garden — Forcing tomatoes under glass — Cucumbers in the open and under glass — Melons and how to grow them — Melons under glass — The watermelon — Pumpkins and squashes.

Beside the grape, a number of vines are of no small importance because of their edible products. This chapter will deal severally with some of these, and their cultivation both in the garden and under glass.

Perhaps the most important of all this group is the tomato (*Lycopersicum esculentum*) of which the fruits are sold in all the principal markets of the world, both winter and summer. Tomatoes are very easily grown out of doors, the one important point being to see that the plant receives no check or set back from the sowing of the seed to the ripening of the fruit.

The seeds of the tomato should not be sown before the middle of March. Start them in a greenhouse with a night temperature of 55° to

60° and, as the plants grow, pot them on and gradually decrease the temperature until about the middle of May; the plants can be placed in a cold frame for the final hardening off. In a week or ten days they can be planted out. While growing the seedlings in the house or frame, be careful to keep the foliage free from moisture at night, especially when they are subjected to cold air, as it might then lead to blight. Always afford the plants plenty of root room, for if they become pot-bound they soon grow hard and wiry. If the seed is sown by March 20, the plants, when ready for setting out, the end of May, should be in six-inch pots about one foot high, and just beginning to show flowers.

The soil in which the tomatoes are set should be well worked and free from "green" or fresh manure, which would cause the plants to make rank growth and but little fruit. To get the best quality, you must stake the plants or train them to a trellis. A good, heavy stake for each plant is about the best method and allows the vines to be set two feet apart; but the training means lots of work. A triangular trellis, about four feet across at the bottom and four feet high, makes a good substitute, each side of the trellis supporting a row. In both cases, the plants

must be kept tied to the support, and all superfluous growth be removed.

I have known people who raise tomatoes to grow one variety year in and year out. This is a mistake if the fruit is for home consumption. Grow a number of standard varieties, and also some of the more unusual sorts which have very distinct flavours. Last summer I grew one hundred and fifty plants and had seventeen varieties — a different kind of tomato for dinner every day for two weeks! Moreover, some of the smaller tomatoes are excellent for garnishing salads, etc. All the different varieties can be found in any reliable seedsman's catalogue. It must be distinctly understood that these directions are for amateur, and not commercial, growers. The latter handle the plants for profit, and although quality receives some consideration, it is secondary to the matter of growing the plants cheaply. On whatever scale you grow tomatoes, however, if they show any tendency toward rust, spray them with Bordeaux mixture. I would always rather spray as a preventive; although it means some trouble, I think it pays.

Forcing tomatoes for winter is quite a different proposition, as the following outline of a season's work will show. The seeds are sown in

flats the last week in July, kept potted on until in four-inch pots, then benched. However, they can be grown just as successfully in large pots or boxes, as in regulation benches. The house should be light and have sufficient head room for the development of the plants (six feet is plenty). Immediately after being set, the vines should be staked, and the stakes secured at the top in some manner. Keep the house on the dry side at night, but in the daytime a little moisture is advisable. In all cases, the plant should be kept to a single stem and this pinched back when it reaches the desired height. Water carefully, especially when the young plants are first placed in the benches. When water is necessary, be sure to wet the entire bed or pot to the bottom and not merely on the surface. Also, you should spray the young plants on bright days as a preventive against the red spider. If rust should appear, immediately try to dry off the atmosphere and spray only early in the morning, with Bordeaux mixture.

When the flowers begin to open, the house must be kept drier. If the weather stays clear and but little fire heat is necessary, a gentle tapping of each vine will suffice to scatter the pollen and set the fruit; but in the dark, dull

days of winter, when the house is likely to become hot and stuffy, it is advisable to fertilize by hand. Do this however only on bright, sunny days and use only flowers that are well open. The method is as follows: gather into a spoon or other receptacle some pollen from a few flowers, by holding the receptacle directly under a flower and giving the stem a light tap. When enough is gathered, dip into it every flower that has opened sufficiently to expose the pistil. The result will be fruits, solid, round, and plump; whereas, without sufficient pollen, they sometimes set, but become hollow and of inferior size. If, when the fruit is the proper size for ripening, you remove about one third of each leaf adjacent to it you will admit more light and hasten the ripening process. It is advisable to tie the fruit, else it may become so heavy as to break the spur; merely support the fruiting spike in the middle by tying it with a piece of raffia to the trellis or stake.

The tomato house should be kept at from 60° to 65° at night with a rise of seven to ten degrees on dull days. On bright days, when the ventilators are open, the temperature can run up to 90° without doing any harm. If the young top growth begins to get spindly after the plants have started

to bear, it indicates that they are in need of nourishment. In this case, either apply a mulch, an inch or so thick, of good, rotted manure and soil in equal parts, or resort to liquid feeding.

It is very difficult to clear a house of insects after they have obtained a foothold, especially the white fly, which is the most serious tomato pest in-doors. The only method is fumigation, the best material being hydrocyanic-acid gas. But this is very dangerous to animal life of any kind and should be handled only by responsible persons and with great care. I use four ounces of water, two of sulphuric acid, and one of potassium cyanide for every 2,000 cubic feet of space in the house.

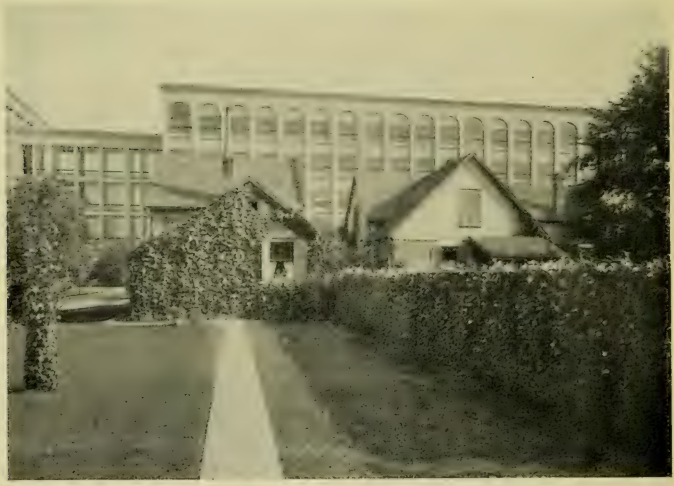
When about to fumigate, be sure all the ventilators are down and all doors but one locked on the inside. Place an earthenware vessel containing the water on the floor of the house, add the acid, then throw the cyanide, wrapped in tissue paper, into the vessel. Keep your face away from the dish while you do this, then quickly leave the house, locking the door to prevent any one from gaining access, and *taking the key with you*. Do not let anybody or anything enter the house until the next morning, when the ventilators should be opened, from the outside, if

A choice greenhouse melon is entire justification of all the care it needed

Gourds grow in all sorts of sizes. Hercules clubs are large indeed

TWO VINES OF THE CUCURBIT FAMILY

Every house on this street is enriched by vines. Boston ivy, Japanese honeysuckle, and morning glory are seen here



We have begun to appreciate the value of beautifying factory grounds. Annuals are effective while perennials are growing

possible. This is the very best means we have for killing greenhouse pests, and if practised once a month with all the quantities reduced one half, will easily and effectively keep the house free of insect enemies.

Tomatoes are sometimes troubled with a blight due to improper care. The only remedy is Bordeaux mixture, but a good preventive is flowers of sulphur blown over the plants with a bellows on dark, cloudy days.

The best varieties of tomato for forcing are Sutton's Winter Beauty, Comet, Best of All, and Frogmore Selected.

Another valuable vine crop is the cucumber (*Cucumis sativus*), of which the fruit is used extensively pickled as well as fresh. The cucumber under favourable conditions is a very rapid grower and easily cultivated; under adverse conditions it is one of the most obstinate and difficult of plants to grow. The soil for cucumbers must be very rich; if merely a few are to be grown for family use, hills can be prepared instead of a whole strip of ground. In this way all the plant food is stored in one place and is easily available. The hills should be about eight feet apart, not less than two feet deep, and about three feet across. The soil should be mixed with at least one third

its bulk of manure, and the surface of the hill left a few inches above the surrounding ground when ready for the seed. This is to hasten the drying out of the soil, as the seedlings, while young, cannot stand wet feet. Never sow the seed before the middle of May, and not even then if the weather is not warm. The plant is a heat lover, and the slightest touch of cold weather turns the foliage yellow, and results in a short crop. Of course, dates are a poor criterion, but to test the strength of this advice in general, sow a hill or two each year before the middle of May, and keep track of the successes and failures of these hills. Don't sow the entire crop at one time, but start a few hills every two or three weeks until the end of August.

If cutworms are prevalent in your locality, sink strips of tin, about four inches wide, bent into circles a foot or so in diameter, about the hills. Ten or a dozen seeds should be sown to a hill, and later thinned out to three or four seedlings. The tin fences, set about three inches deep, ward off the cutworms until the plants are pretty well along, when they may be removed in time to protect other, newly sown hills.

Cucumbers are very subject to rust and other fungous diseases. As a preventive, spray every

ten to fourteen days throughout the season with Bordeaux mixture or ammoniacal copper carbonate. Don't wait for the appearance of the disease, thinking that it may not hit *your* crop. It is no respecter of "good intentions," and if it comes, you will probably not pick many cucumbers.

With their freely trailing habit, cucumbers do not require support or training, but a plan that I have tried for two seasons, and found very satisfactory, is to run a row of pea brush along beside the cucumber hills, sticking it in a very slanting position. The vines climb over and not only are kept more free of rust, but also seem to grow better; and, of course, they occupy less space — which is an important point in the small garden.

The cucumber will be ready for picking in from eight to ten weeks from the sowing of the seed. Don't let the fruit stay on the vines; if you cannot use them all give some away, but pick them as often as possible. When the next lot of hills begin to bear, pull up the vines that have gone past their prime; in the first half of the season, you can resow in these hills at once for a later crop. The best varieties for outdoor growing are of the White Spine type; other good

varieties are Cumberland, Long Green, and Everbearing.

The cucumber also takes kindly to greenhouse forcing, but as a different type, commonly termed the English frame cucumber, and very superior in quality to our own. It is more fleshy, with relatively fewer seeds, and very long, the general run averaging about fifteen inches in length by one and one half, in diameter. The shorter, American type is sometimes grown under glass, but mainly for the cheaper market trade, and rarely, if ever, for quality produce. The ideal house for cucumbers has raised benches, is supplied with bottom heat, and can be kept at a temperature of 65° at night, at all times.

Seed can be sown at any time of the year, but you must allow three months for the fruit to mature properly. Start the seeds in inverted pieces of sod or, better still, in three-inch pots about one third full. When the seedlings grow above the rims of the pots, fill up the latter with soil; then, when the plant is well rooted, set it in the bench, before it has opportunity to become pot-bound. The bench should have good drainage — at least an inch of sifted cinders, clam shells, or broken pots, with a little moss on top to keep it clear — and should contain soil very rich,

but not in the least stiff or clayey. Otherwise, sand must be added until water will readily drain through. Make hills fifteen to eighteen inches across and about six inches deep, and set the young plants in the centre. As they grow, roots will show on the outside of the hills. Apply a couple of inches more of soil (to the outside, not the top) repeating this until the bench is filled; then resort to mulching and liquid manuring. Cucumbers are coarse feeders and need an occasional mulch of equal parts of soil and manure. They should also be watered freely. Keep the house moist during the day, but dry it off moderately by night. Look out for draughts when the plants are moist, for at this time they are very susceptible to mildew.

The vines must be trained to a trellis several kinds of support may be easily made. One plan is to run wires lengthwise of the house about a foot apart and the same distance from the roof; stretch other wires about the same distance apart, only in the opposite direction — or from the peak to the gutter — and the same distance from the glass. Then train the plants to these, tying them wherever there is a fruit, to prevent its breaking down the shoot.

Cucumbers set very freely in bright weather,

but in dull, dark days of winter, it becomes necessary to hand-pollinate the flowers. The usual method is to pick a staminate flower, turn back the petals (being careful not to touch the anthers, and so rub off the pollen), then insert the anthers into a female, fruit-bearing, or pistillate blossom.

The vines stand full sunlight in winter, but as the weather grows warmer and the light so strong that the plants show signs of wilting, the house must be shaded. Shade is best afforded by a slat trellis, such as is described in Chapter XV.

By fumigating the house occasionally with hydrocyanic-acid gas, as recommended for tomatoes, you will keep down all insect pests; but for mildew, which often attacks this plant, the best plan is to use a sulphur burner, or to dust flowers of sulphur on the leaves. A good preventive is sulphur painted on the heating pipes every damp, cloudy day, when mildew is most apt to appear.

As regards varieties, I prefer Sutton's Every Day, a very free setter and the best cropper I know of. Telegraph is an old friend that has stood the test of time, while other good varieties are Sion House, Lady Kenyon Favourite, and Duke of Edinburgh.

As a table fruit the musk melon (*Cucumis Melo*) is the most refined of all garden products when

properly grown; yet there is nothing more disappointing than a poor one. It is safe to say that seventy-five per cent. of all melons grown for the market are of a very inferior quality in spite of the fact that we know what they need in order to turn out well. To have good quality (and this should be our first aim), melons must be grown rapidly, never receiving a check of any kind; they must have good, deep, rich soil, must be freely watered during the growing season, and, finally, the seed must be of the best.

Hills should be prepared as for cucumbers, save that it will be better to have them ten feet apart rather than eight. Prepare them the last week in April, then cover each one with a small, wooden frame, a foot or two square, with no bottom, and a glass sash top. The glass should not be removed for a week or ten days, by which time the soil beneath will be thoroughly warmed and ready to receive the seed. The middle of May is early enough for sowing, however. Allow ten or twelve seeds to a hill, thin out to six seedlings, then later to three. The frames may be kept closed until the seeds are above ground; then air must be gradually admitted. By the time the plants fill the frames, they should be accustomed to having the glass removed entirely, so that the

frames can also be taken away. But select a good, warm day for this, and if any chilly nights follow, you had best cover the hills with cheese cloth or paper.

Melons should be sprayed regularly throughout the summer with Bordeaux mixture, and should never suffer for want of water. The plants should be spread out evenly over the ground and pegged in position with small twigs bent double. If properly handled, the melons should be ripening in from seventy-five to ninety days from sowing. Just before they ripen, place a small board, some six inches square, under each fruit, to keep it clean and to produce an even colouring.

In gathering melons, remove only those that fall from the vine when gently touched; otherwise they are not ripe and should be left, at least until the next day. Be very careful not to step on the vines. From twenty-eight hills of melons (of the variety Emerald Gem) sown on May 20, last year, I began to pick on August 5, and averaged thirty melons a day up to and including September 20, or 1,230 melons in all. Only melons first-class both as to condition and quality were counted. I prefer Emerald Gem of all the varieties; the fruit is small, but of fine, salmon flesh and excellent flavour; other good varieties

with salmon flesh are Paul Rose and Delmonico. Green-fleshed varieties of merit are Rocky Ford, Long Island Beauty, Netted Gem, and Jenny Lind.

In forcing melons, the same rules hold good; *viz.*, quick growth, good soil, and the selection of good seed. The house for melons should be similar to that described for cucumbers, except that a night temperature of 70° should be available during the growing season. The seed can be sown at any time of the year allowing from 80 to 110 days for the ripening of the crop. The shorter period is for spring sowing, and the longer for fall-sown seed. A crop started in September, for instance, cannot be harvested before January, because of the unfavourable seasonal conditions. Sow the seed in two-inch pots and later transfer the seedlings to four-inch pots, whence they can be set directly in the hills, after these have been prepared with good drainage and rich soil. Some chopped sod is a good addition. Let the hills be about eighteen inches apart, and after the plants are well established, remove every second hill. At this time also, pinch the terminal bud of the main stem, then choose, and begin to trim the four or five young shoots that are to become the fruiting branches. At all times

remove the very weak, thin, useless shoots. Trellises must be built as for cucumbers, or, better still, if you have head room, they can be run vertically through or across the house. However, the principle is the same, and the wires should be stretched so as to give the same mesh — of about one foot.

When the flowering stage is reached, it will be necessary to pollinate by hand, exactly as already described; *viz.*, by inserting a staminate flower into the pistillate blooms. Pollenize at least twelve blossoms on each plant and all at the same time. Then remove any fruit that is further advanced than the main crop, as it would mature early at the expense of the others. If you obtain a good, even set, the fruits will all start to swell at one time. When they are about the size of walnuts, thin out to eight melons to a plant; when they are about two inches in diameter, give the final thinning, leaving either four or six melons. The former number will result in better and larger fruit, but some prefer to harvest the larger number. Always endeavour to properly balance the crop; don't let one stem bear it all, any more than you would attempt to raise it all on one plant.

Spray the melons lightly on bright days only and keep the atmosphere moist until the fruit

begins to ripen. Afterward, a dry house will yield far better results. At all times, take every precaution against draughts. As before, the best protection against insects is prevention. Fumigate every two weeks with half- or quarter-strength hydrocyanic-acid gas, or by burning tobacco stems. Once among the melons, insects are almost certain to render the whole crop worthless.

Fungous diseases are sometimes troublesome and also call for preventive measures, rather than attempts at a cure. Avoid mildew by keeping the plants dry at night and on cloudy days, and by painting the pipes with sulphur. During dark, cloudy weather, spray with soap or kerosene emulsion. Another, and probably the worst disease of melons is the canker or stem rot. This may attack the vines only a few weeks before the fruit is ready to pick, and, as there is no cure, we must guard against this enemy also. Always try to keep the stem, just at the surface of the soil, dry. A little cracked charcoal or white sand, placed around the base of the stem will accomplish this, and sometimes sulphur, applied when the very first symptom — a brown appearance of the stem — is observed, will dry up the disease. Melons are sometimes bothered with

blight, which is usually traceable to some bad handling of the plants — syringing during dark weather, over-ventilating, or some such cause. Here, too, there is no cure when once the disease gains a foothold.

Melons leave the vines when ripe, and, to prevent them from falling and breaking, some kind of support is necessary. A common way is to make a sling of raffia and fasten this to the trellis and around the melon. An easier plan is to take a piece of mosquito netting about six inches square, tie strings to the corners, place the netting under the melon, then fasten the strings to the trellis, being careful not to raise up on the fruit, but to merely provide a hammock for it to fall into.

Good varieties for forcing are Blenheim Orange, red-fleshed, and Hero of Lockinge, green-fleshed; but my best results have been with Invincible Scarlet, a splendid, salmon-fleshed variety. Emerald Gem forces fairly well, but is under sized.

If properly grown, and left on the vine until properly ripened, the watermelon (*Citrullus vulgaris*) is an excellent fruit. The best way to handle this vine is the method advised for outdoor musk melon culture — *i. e.*, sowing the seed in small, individual frames. I might say here that any gardener who hasn't a supply of "melon

frames" is behind the times. The best varieties of watermelon are Cole's Early, Boss, Sweetheart, and Halbert Honey.

The two fruits (or vegetables, as they are ordinarily called), which I take up together, are not used to the same extent as other vegetables in this country, but we would certainly miss them if they were not in the garden, especially when the fall season rolls around. These are the squash and the pumpkin, which I consider together because of the similarity in their natures and their treatment. These plants should have the hottest corner in the garden and a soil made very rich by the addition of manure. The seed can be sown about the middle of May and needs but little subsequent care until harvest time. However, if rust should appear, spray with Bordeaux mixture, and in the event of attacks by chewing insects, add to a barrel of Bordeaux, one quarter of a pound of Paris green, and spray with that as needed.

The best variety of pumpkin for pie making is the flattened and ribbed Large Cheese; other good varieties are Winter Luxury, Mammoth, Tours, and Calhoun. Among squash, the best variety is English Vegetable Marrow, but Delicata, Essex Hybrid, and Hubbard also are good.

CHAPTER XX

Climbing Roses as Vines

What climbing roses really require — Preparing the bed — Planting, pruning, and training — Keeping the soil rich — Transplanting and propagating — Insect troubles — The worst diseases — Roses for spring, summer, and fall — Valuable hybrids — Some tender climbers and how to succeed with them.

Among the hosts of roses, are found what are probably the showiest and most popular of all the summer-flowering climbers. Aside from the wide range of bright colours with pleasing fragrance, there is the fact that they are roses. There is a subtle charm in that alone, and, when the ease of cultivation also is considered, it is little wonder that they are so highly esteemed. At the same time, it is true, that to hundreds of people the great possibilities of these climbing roses are unknown. The dwarf kinds are so numerous as to supersede the climbers, excepting some half dozen that every one seems to know.

Although easy to grow, it is also true that too much care and attention cannot be given to the selection of a proper site, and to preparation of

the soil at the outset. These provided, other material factors can be afterward remedied to a certain extent. First of all is location. If this is unfavourable, all other factors count for nought. Sunshine is essential; exposure to the sun all day is not absolutely necessary, but is most desirable. While the plants should be given protection from the prevailing summer winds of the locality, this wind-break must be sufficiently remote to render impossible interference with a free supply of air.

Roses must have air and plenty of it. If the ground is raised slightly above the surroundings, all the better; thorough drainage must be secured in some manner, for to plant roses in a cold, damp soil, or in a low spot where surface water settles, is simply to sacrifice the plants. Under such conditions they will quickly succumb to mildew. Planting in a shady spot, under the drip of trees will also result in mildew. On a cold soil (a stiff, clayey loam that retains moisture), I have found that ample drainage and consequent warmth of the soil can be provided by about one foot of broken bricks, clam shells, sifted cinders, or, in fact, anything of a hard nature, large enough to allow the water properly to filter through. This material is put in the bottom of

the trench, two or three feet down, and covered with something to prevent the soil clogging up the interspaces. Sphagnum moss answers admirably, but anything of a like nature will do. The reader need not become alarmed over this advice, because only in extreme cases is it necessary to go to all this bother.

Roses revel in deep, well-enriched soil, and I have yet to hear of any one getting too rich a bed for them. Thoroughly trench the soil three feet deep and add to every two cubic yards of earth one cubic yard of manure. Cow manure is the best, but any good farm yard manure will do. As the top, or surface soil contains the most fertility, it is turned to the bottom in the trenching, which should be done, at the very least, six weeks before planting — ten weeks is better — to give the ground an opportunity to settle before planting time.

Climbing roses do not need much pruning, but one cannot afford to neglect it altogether. Merely remove the dead wood and the very weak shoots and cut back on the previous season's growth far enough to get two or three good, strong breaks; but do not let the plant carry more wood than it can support. If a plant is doing well, it needs very little pruning; but if

Crimson Rambler, a true crimson

Dorothy Perkins, a delicate pink

TWO FAVORITE HARDY CLIMBING ROSES

Boston ivy is the standby for brick buildings, but it is just as successful in such places as this

The Wistaria will grow in the very largest cities. An ancient vine in Irving Place, New York

it is not behaving satisfactorily, and there is no question as to its having plenty of nourishment, it must be pruned severely. In such a case, cut back far enough to produce strong, new growths, even to the extent of cutting right down to the ground. All the pruning of climbing roses should be attended to in early spring.

When growing well, the plants will send up, simultaneously with the appearance of the flowers, several strong suckers which may be taken for renewal growths if it is not desired to let the plant climb to any great height. Remove one or two of the oldest shoots to make room for these new comers. If a greater height is wanted, these young canes must be cut out immediately, as nearly all the strength of the plant is directed toward their development. There is just one caution to be given here: make quite sure that the plant is growing on its own roots before training up the new suckers, because with grafted plants, the root suckers must be kept cut out at all times.

The rose is not a natural climber; it can ramble over low shrubs, large bowlders, and such things, but when it is to grow about a veranda pillar, it must be artificially supported by occasionally being tied as it grows. This is more satisfactory

than ignoring it until the end of the growing season. It is then a hard job to straighten out the badly tangled or twisted shoots, and the wind is likely to break them when they are very long. Never let a shoot grow upright for too long a period, and always avoid letting one get very far ahead of the others. If you do, the strongest or leading shoot will receive the greater quantity of the sap, and the plant, by throwing its strength to the top, will soon become nude at the base.

For training roses, I prefer to use staples, as the plants make but few branches and are easily handled by this method; moreover, staples are easily removed, which is a convenience in the case of tender roses requiring winter protection, or where the plants, being subject to the heavy drip of a building, are taken down and buried, or otherwise covered.

In the fall, give a mulch of six inches of good manure, which will not only serve as a winter protection, but will also yield plant food in the early spring when growth starts. In very dry locations, summer mulching also is desirable.

Very tender roses, trained on the outside of a veranda or building, and subjected to a heavy drip in winter, need special attention. It is

best to take them right down, tie all the branches together, bend them down to the ground, and cover them with five or six inches of earth; this, in turn, when slightly frozen, is covered with some loose stable litter or leaves. Treated thus, it is surprising what very tender varieties may be grown in very exposed situations. For instance, I have had Maréchal Niel and Reine Marie Henriette growing on a veranda on Long Island. Injury from drip may also be prevented by wrapping the more hardy varieties in burlap or very heavy paper. Never prune in the fall, if the plants are to be covered, as sometimes the topmost eyes will push out into life and be injured by late frosts.

Feeding old, established plants, that have exhausted the soil, can be accomplished by spading under some manure, but better by retrenching the ground just outside the old trench lines; applications of liquid manure may also be made. In early spring, spade under a dressing of four or five inches of manure, and after the buds burst and just before a rain, give a dressing of fertilizer in which ground bone is the principal ingredient. About the middle of May, begin to give the plants regular weekly applications of liquid manure. Unfortunately, this

treatment tends to bring the roots to the surface, which, of course, should be avoided, unless one is anxious to water in dry weather. Retrenching is slower in giving results, but its effects are more lasting.

Transplanting can be done at almost any time, except during the period of actual growth (June and July) if the plants are severely pruned, for they will quickly start growth from the young eyes. Spring, however, is the best time, and the earlier the better. Even though planting under the most favourable conditions, it is advisable to prune well. A quick start counts for much in planting and it will help greatly to throw a handful of fertilizer in the ground near the roots, but not in actual contact. If growth does not start quickly, the wood hardens. Young rose plants can be raised by layering in early spring. Remove all flowering wood. Make a clean cut about half way through the shoot to be layered, just below an eye, bend the shoot down to the ground, and fasten it with pegs or stones. Place a handful of sharp sand around the cut portion and keep it well watered. It will quickly emit roots and may be severed from the parent plant in from four to six weeks.

To summarize the requirements of roses:

select a dry, airy, sunny location, properly enrich the soil before planting, plant with care, water during very dry weather, protect the first winter or two, and keep a sharp lookout for bugs.

Roses, generally speaking, are not any more subject to insect attacks than are any other flowering shrubs. The worst pest is the rose beetle, which, however, attacks other shrubs that flower about the same time. Fortunately, its destructive season is short, and as most of the climbing roses flower later than the ordinary garden kinds, they escape untouched. As a preventive on the earlier flowering kinds, I have tried everything I ever heard of as being good — arsenate of lead, Paris green, kerosene, and tobacco preparations — all with practically no success. Hand picking is the most effectual means of combat. It is not such an awful task as one may imagine, and one can usually get some of the small boys of the neighbourhood to do the work at a small cost. Let each worker have a bucket with a little kerosene in the bottom. The advantage of this is that the females are destroyed and the intensity of next year's attack lessened. These insects do not chew on the surface, like most other large insects, but bore

down into the very heart of the flower, where it is impossible to get any poison.

If any of the leaves become skeletonized, the rose slug is at work and will be found on the *under* side of the leaf; hence the poisons (hellebore, arsenate of lead, or Paris green) must be applied there. A little Ivory soap added to the last two, will help them to adhere. Hellebore should be dusted on when the plants are wet with dew. The others are used in water in following proportions: Paris green, one ounce to twelve gallons of water, kept stirred all the time; arsenate of lead, one pound to ten gallons; and Ivory soap, one bar to ten gallons.

If the green fly, or aphis, is troublesome — some will always be found on the tips of the young growth — it can be destroyed with some of the tobacco preparations, kerosene emulsion or Gishurst's compound. The same remedies are used for the leaf hopper, whose presence can be detected by yellowish blotches showing on the foliage. The insect itself will be found only on the under side of the leaf, where, of course, the spray must be directed.

In using poisons of any kind on the plants, one thing should be borne in mind: it is not uncommon for children to eat rose petals; in

fact, I have seen some grown-up folks do it, too. Therefore very plain warning of the presence of the poison should be given.

The San José scale will also attack roses, and is a difficult pest to overcome. Since the plant itself is almost sure to be very sickly before the presence of the scale is detected, the best course is usually to dig it up at once and burn it. If, however, it is worth the trouble of saving, spray in spring and fall with some of the standard preparations for killing scale. While my preference is for the lime, sulphur, and salt wash, I must confess that it is terrible stuff to use, as it must be applied when warm. Some of the new, special preparations for this insidious pest may be used, and will be effective if the directions are followed; the most important point is to see that all parts of the plant are covered with the spray.

Mildew is the commonest ailment of climbing roses, and the powdery gray coating on the surface of the leaves is especially disfiguring to veranda plants. If it is not taken in hand as soon as it is seen, the affected leaves will drop from the plant, leaving bare, unsightly stems. A good remedy is flowers of sulphur blown on the plant with a small bellows on a good, bright day, but spraying with potassium sulphide, five ounces to

ten gallons of water, is better, to my mind, because, if the day is windy, the sulphur is blown from the foliage. Spraying with a solution of copper will also control the mildew.

Black spot is a fungous disease. As the name suggests the leaves have little black spots on them, which, if left untreated, get larger; then the leaves fall. For the most part it is confined to roses grown under glass, but I have seen climbing roses affected. It is due to a bad location. The best remedy is to pick off the affected leaves, burn them, and then give the plants a good spraying with a copper solution. This must be done early in the morning, before the sun strikes the plants. The leaf blight, another fungous disease, is more common on outside roses, and can be determined by the generally unhealthy appearance of the foliage which becomes spotted and flecked with a grayish colour. The best remedy for this is a copper solution. Very few diseases, however, appear on roses that are growing under ideal conditions.

ROSES FOR FIVE MONTHS

In recent years, the introduction of many hybrid climbing roses has served to direct attention toward their possibilities when grown upon pillars, and especially on verandas. Some of

these newer kinds have special merit, but the older ones are by no means to be forgotten. We can now have climbing roses in flower continuously from June to October, inclusive.

There are three distinctly marked groups of climbing roses: (1) multiflora, flowering in June; (2) setigera, flowering in June; (3) Wichuraiana, flowering from July to September.

The last named has become available only since 1893, and some of its more recent hybrids promise to extend the season of bloom right up to frost. The hybridist has been very active in blending varieties of these three groups, so that the lines of division are rapidly becoming less clearly marked.

THE MULTIFLORA GROUP

Without a doubt, the popular Crimson Rambler, the best known variety of this earliest-flowering group, is also the best dark-red-flowered climber, and has given a great impetus to pillar planting for flower effect. It comes into bloom in June, but it is, unfortunately, very liable to mildew. Very like it, is Philadelphia, flowering about ten days earlier, just when the rose bugs are abundant, but it is not so liable to mildew. So you may take your choice according to conditions.

The best pink rose, of precisely the same type, is Dorothy Perkins. Pink Roamer contests the place of honour among the pink-flowered varieties, but the blossoms are small, though so very numerous that the plant in its season is a solid mass of bloom. Another drawback is that it is greatly relished by the rose bug, which seems to attack it with special vigour. It flowers in early June. Other good pinks of the rambler type are Dawson, which is double, and Wedding Bells, which has semi-double flowers with white centres. Heléne is a deep-rose colour, single and very fragrant, greatly resembling the type, *Rosa multiflora*, which produces its profusion of pure-white flowers in immense trusses about the middle of June.

The best white rose of this type is the White Rambler (Thalia) and the best yellow is the Yellow Rambler (Aglaia). Both flower at about the same time as Crimson Rambler, possibly a few days later.

INTERMEDIATE-BLOOMING ROSES

The second group, or intermediate-blooming climbing roses, which closely follow upon those of the early or multi-flowered group in June, are also derivatives from our beautiful native prairie

rose (*Rosa setigera*). The type itself is one of the most satisfactory of all plants for free rambling over rocks, fences, or walls. It is very hardy, is not particular as to soil, and, as would be naturally expected of a native plant, it will thrive in situations where every other rose fails utterly. The single, rich-pink flowers are produced in great numbers all at one time, so that the plants become veritable wreaths of bloom, which last for about two weeks. As a trailing plant, allowed to fall over a trellis or clamber down the front of a steep bank, I do not know anything that is more pleasing than the prairie rose.

Even more free flowering is its variety *tomentosa*, producing smaller flowers at the same time. From this prairie rose, a number of the most popular and widely distributed climbing roses of this country have been produced; and, indeed, one of the very best white roses of a free-growing habit of any section is the famous Baltimore Belle. Its companions, Seven Sisters, bright crimson, and Queen of the Prairies, deep crimson, are equally well known.

CLIMBING ROSES UNTIL FROST

Ever since its introduction in 1893, the memorial rose (*Rosa Wichuraiana*) has been, most

justly, one of the most highly esteemed summer-flowering shrubs of trailing habit. Its numerous flowers are small, about one half inch in diameter, but the bright, glossy-green foliage makes it a handsome plant for trellis use, even when it is out of flower. In the matter of hardiness, there are few plants that will excel the memorial rose, and where it becomes established, it will self-sow in great profusion. It makes very long shoots and can easily be trained to cover the entire front of the piazza of an average suburban dwelling. The leaves are almost evergreen, and this characteristic has been carried to some extent into its hybrids. In the majority of cases, however, the hybrids do not carry their foliage all winter, but retain them until very late in December. For that reason alone, they merit some consideration, as they would be decorative plants even though they never flowered.

This group of climbing roses surpasses the other two in one great, important quality. It does not make one burst of flower and then rest, but continues producing its blossoms almost continuously from July until September or October, and in one or two instances (as in the case of Dèbutante), varieties continue to flower until stopped by the frost. This quality of this group

of hybrids has not been given as much appreciation as it deserves. As a white-flowered plant, the type itself far surpasses any of the hybrids. Moreover, it can be used for a multiplicity of purposes; as a ground cover, as a trailer, and as a pillar rose it is unsurpassed. If a pink-flowered form is preferred, we are fortunate in having it supplied in the variety *carnea*.

Almost immediately after the introduction of the memorial rose, many rose growers busied themselves in producing crosses between it and roses of the rambler type, principally the Crimson Rambler itself, and as a result, there have been some remarkable accessions to the list of climbing roses. Other hybrids could result from crossing these with different types of large-flowered roses, so that the wealth of material available to-day includes nearly everything that was ever worth while.

Perhaps the most striking result has been the improvement of the memorial rose by the admixture of the rambler. All the resulting hybrids possess positive merits. In my opinion, the very best single-flowered rose for showering or drapery effects, without any exception, is the Jersey Beauty, the blossoms of which are two to three inches across, creamy white in colour,

with a very prominent mass of pale yellow stamens, and a black disk in the centre. This variety has the peculiarity of closing its flowers at night and opening them again the following morning. If you want a double rose of the same type, grow Manda's Triumph. The flowers are sweetly scented and pointed in the bud; the blooming period extends over two months, from July to September.

Farquhar is the best bright-pink rose of this group. The colour is wonderfully brilliant, being almost a cherry hue, and the flowers are produced in great clusters. Except in colour, it is a counterpart of Triumph. The freest-flowering roses of this type are Dèbutante and Lady Gay, both a clear, light pink, the former having double flowers an inch and a half across. The latter, though flowering more profusely, has smaller individual blooms. For very deep-pink flowers, grow Minnehaha; and for crimson, Hiawatha.

As a foliage plant, Evergreen Gem, one of the early hybrids of this section (having *Rosa Wichuraiana* as one of its parents), is unique. Its flowers are creamy white, single, and very large, recalling those of the tender, southern Cherokee rose. The evergreen character of its foliage, is more marked on light, sandy soils than

on heavy soils. North of New York, though partly persistent all winter, this plant is not of the same type of evergreen as the holly. The foliage is, however, held better and retains a finer colour than that of the California privet. Finally, I commend Gardenia to your notice. The character of this flower is told by its name, and more than that I hardly need say.

SOME TENDER ROSES

Where it is possible to give special attention to the plants that are not absolutely hardy, there is abundant opportunity to greatly enhance the effect of the piazza during the season of rose bloom. These tender varieties, of course, must be taken down from the trellis or pillar and given protection over winter, in the manner described at the beginning of this chapter. There are just a few of these tender roses that are worth all the effort that their cultivation entails.

Reine Marie Henriette (Tea) is one of the most brilliantly flowered, so-called red, but really almost cherry-coloured roses of all the thousands that are in cultivation. It has not been popular as a greenhouse vine, but as a trellis rose, where it can be given the necessary protection, it far surpasses anything else in the family. Beginning

to flower in June, it will continue to produce its gorgeous blossoms until the time of frost. It can be counted upon to attain a height of fifteen feet.

For pale-pink, large-sized flowers, take climbing La France, in every way like the popular dwarf variety of the same name, except in its habit of growth, and in that (as is the case with all climbing forms of dwarf roses) it flowers a week or ten days later. As a good, free-flowering, yellow rose, climbing Perle des Jardins is my favourite, although there are plenty of other roses which will give richer colour, as, for instance, Réve d'Or and Cloth of Gold, typical old-fashioned roses.

In the South, the two banksia roses may be grown out-doors, but in the North they generally are available only in greenhouses. They are very free-growing and produce trusses of flowers, with a marked odour of violets, the individual blooms not more than a half inch across. The leaves are shiny and of about the same size as those of the memorial rose, but of thinner texture. One variety is creamy yellow; the other is white. Gloire de Dijon is perhaps the hardiest of the tender climbing roses and is excellent if trained on a trellis for a comparatively short time. It

is strangely subject to what is called canker, and is therefore considered a difficult rose to grow.

The best of all the tender climbing roses, however, for delicacy of colour and perfection of form in the flower, is Maréchal Niel, the richest pure yellow of any flower of the family. The buds are pointed, about two, to two and a half inches long, and, true to its family characteristic as a Noisette rose, the flowers are produced in clusters.

In the neighbourhood of New York, I have found the varieties named in the table in Chapter XXI thoroughly satisfactory, the list being a fairly complete one for this latitude; my preference, however, is for those given in the preceding paragraphs.

CHAPTER XXI

Vines For Special Purposes

For all kinds of soil — For various positions — For bold floral display — For cut flowers — For fragrance — For in-doors — For city use — Lists for the entire range of uses.

Vines can be grown anywhere. This seems a pretty broad statement, but it is a fact — if they are properly selected as to their ability to withstand various hardships, such as draughts, cold, wet places, and various other conditions detrimental to plant life in general.

There is a large number of varieties of vines, and their requirements are as distinctly different as the varieties themselves. Generally speaking, the aim always should be to give these plants as nearly as possible their natural requirements; but, with good judgment and a little extra care, different vines may be acclimated, thereby greatly increasing the many uses of this versatile race. Don't try to rob nature of too much of her belongings, however. All plants do not lend themselves readily to one's plans, so try to select

those that will. There are some vines that do quite well in a very sandy soil, and, of course, vines that do well there, usually do better in a light soil that is enriched. But there are vines that will not do at all for light, sandy soils; they would rather have their roots foraging in a heavy, loamy soil. Then, again, no plants like a stiff, clayey soil; but there are some that will grow quite well in it and these must be selected. The same holds good in regard to wet locations where surface water drains; some vines will do moderately well in such locations, while others will soon become diseased and die.

In large cities, it is difficult to get some plants established, but it is possible to have vines in such places, as there are some that are immune from smoke and dirt. Similarly with seashore conditions; the cold, damp atmosphere makes it hard for plants to grow well, but there are some vines which are not bothered by conditions of this kind. There is also a vast number of vines that can be used as seashore plants if they have a little mass planting protecting them from the wind that blows in over the water, charged with salt moisture, which is very harmful.

A good plan in places where space is limited is to grow vines valuable for cutting; you not only have the general decorative effect but excellent flowers for the house. There are, however, those who desire vines just for the effect they produce when in bloom. Some vines are especially adapted for this, but care should always be taken to get those that look well even when not in bloom.

There are vines that stand neglect, and others that require coddling; some have curious fruit for children to amuse themselves with; some have delightfully fragrant blossoms; some have evergreen foliage that is useful for winter effects; some flower in a particular season; and some continuously from June to frost.

In both town and country, too, vines are space-savers. Growing vertically, as they do, they occupy, as a rule, little ground space; therefore no one can make the usual excuse of "lack of room."

Then there are the useful vines, the ones that all should grow — the grape, melon, cucumber, and so on. Vines of this type can be used in and around the garden for covering rubbish heaps and other unsightly objects, not only serving

as a screen, but also giving an abundance of good fruit.

Foliage vines, in their way, are just as valuable. They require very little attention, no pruning being necessary; they are less exacting in their demands as to weather and other conditions, and they look well at all times, not giving you the sense of disappointment that you feel when the petals begin to fall from your pillar roses, and you know that there will be no more glory for another year.

Any one can learn the proper plants to place in certain soils and exposures, but it takes time, at least one year for every experience. The life of every man is too short for him to trouble himself in this way when the information can be had by a shorter route. The accompanying list will save the amateur these years of catalogue hunting and much disappointment, if he will try, as far as possible, to follow the directions carefully as to the requirements of the different vines.

Best vines for sandy soils, those that have great drought-resisting powers and that will grow in dry locations:

Ampelopsis tricuspidata
Jasminum nudiflorum
Lycium Chinensis
Lathyrus montanus
Lonicera Japonica (varieties)
Pueraria Thunbergiana (Kudsu)
Convolvulus Japonicus
Most annuals

Vines also suitable for light, sandy soils, which have been well enriched with manure:

Climbing roses — *Periploca Græca*
Akebia quinata — *Hydrangea petiolaris*
Clematis paniculata — Clematis (large-flowering)
All annuals

Vines which revel in a heavy soil:

Wistaria Chinensis — *Actinidia arguta*
Tecoma grandiflora — *Celastrus scandens*
Aristolochia macrophylla

Some vines that will endure a wet location:

Hedera Helix — *Lonicera Japonica* (varieties)
Wistaria Chinensis — *Actinidia arguta*
Aristolochia macrophylla — *Lathyrus palustris*

Best vines for covering stone or brick buildings. Such vines should climb by rootlets, as otherwise it means a lot of work to train them:

Tecoma (all varieties) — *Hedera Helix*
Ampelopsis tricuspidata — *Euonymus radicans* (varieties)
Hydrangea petiolaris

It is hard to find vines that do well with a coast exposure. The following will best withstand such conditions:

Wistaria Chinensis — *Lonicera Japonica* (varieties)
Aristolochia macrophylla — *Euonymus radicans*
Celastrus scandens — *Lathyrus maritimus*

Vines for fall or winter effect:

Hedera Helix (varieties) — *Lonicera Japonica* var. *Halliana*
Euonymus radicans (varieties) — *Celastrus scandens*
Lycium Chinensis

Best vines to grow for cut flowers:

Lathyrus odoratus (Sweet pea)
Tecoma (all varieties)
Forsythia suspensa
Climbing roses (Rambler type)
Lonicera Heckrotti
Wistaria Chinensis

Best vines to grow for a big display of flowers:

Clematis (all varieties)
Wistaria Chinensis
Hydrangea petiolaris
Climbing roses (all varieties)
Forsythia suspensa
All flowering annuals.

For growing in large cities, the foliage vines are the best. The two flowering vines mentioned below, however, will stand great hardship:

Ampelopsis tricuspidata
Ampelopsis quinquefolia (varieties)
Wistaria Chinensis
Forsythia suspensa
Euonymus radicans (varieties)

Best vines for quick effects as screens. The quickest growing vines are annuals; for permanent effect the following are recommended:

Aristolochia macrophylla
Pueraria Thunbergiana
Vitis Labrusca
Akebia quinata

Some that are quicker growing but require planting each year:

Gourds
Humulus Japonicus
Dolichos Lablab
Tropæolum majus
Phaseolus multiflorus (Scarlet runner)

Vines for covering fences, dead hedges and various other low objects, where not a heavy screen, but a good display of flowers is desired:

Apios tuberosa
Adlumia cirrhosa
Eccremocarpus scaber
Cobœa scandens
Boussingaultia baselloides (Madeira vine)
Ipomœa (all annual kinds)

Best vines for ground covers. These are nearly all evergreen. With few exceptions, they should not be planted among low growing shrubs, as they will ascend them:

Euonymus radicans
Mitchella repens
Lonicera Periclymenum
Hedera Helix
Vinca minor
Epigæa repens

Best vines for trailing along steep banks:

Rosa Wichuraiana
Lathyrus maritimus
Hedera Helix
Convolvulus sepium
Lonicera Japonica
Lathyrus grandiflorus

Vines that will stand a lot of neglect. This class, however, responds as readily as any other to good treatment:

Lonicera (all varieties)
Ampelopsis tricuspidata
Actinidia arguta
Wistaria Chinensis
Boussingaultia baselloides (Madeira vine)
Lathyrus latifolius

Best flowering vines for a sunny veranda. The idea should be to get vines that also look well when not in flower:

Tecoma grandiflora
Clematis (large-flowered)
Climbing roses (Wichuraiana type)
Jasminum officinale
Hydrangea petiolaris

Flowering vines for a shady veranda. Any of these vines will stand a sunny location, but the ones just mentioned are not so good in the shade as these:

Cobæa scandens
Lonicera Heckrotti
Akebia quinata
Wistaria Chinensis
Celastrus scandens
Clematis paniculata

Foliage vines for a sunny veranda:

Aristolochia macrophylla
Pueraria Thunbergiana
Humulus Japonicus var *variegatus*
Ampelopsis heterophylla
Bryonia dioica

Foliage vines for a shady veranda:

Ampelopsis tricuspidata
Hedera Helix
Euonymus radicans
Ampelopsis quinquefolia

Best vines to force for an Easter display:

Climbing roses (all varieties)
Bougainvillæa glabra var. *Sanderiana*
Jasminum officinale
Wistaria brachybotrys
Clematis (forcing varieties)
Clerodendron Balfouri
Lathyrus odoratus (Sweet pea, for cut flowers)

Best flowering vines for the stove house:

Allamanda (all varieties)
Aristolochia (all varieties)
Thunbergia grandiflora
Jasmine (all continuous bloomers)
Clerodendron Balfouri
Bignonia (tropical varieties)

Foliage vines for the stove house:

Cissus discolor
Pothos aurens
Philodendron (all varieties)
Monstera deliciosa

Flowering vines for the cool house:

Lapageria Rosea
Stephanotis floribunda
Tender roses
Solanum jasminoides
Clematis
Plumbago capensis
Lathyrus odoratus (Sweet pea)

Foliage vines for the cool house:

Ficus pumila
Asparagus medioloides
Asparagus plumosus

Some vines with sweet-scented flowers:

Boussingaultia baselloides (Madeira vine)
Stephanotis floribunda
Climbing roses
Jasminum officinale
Apios tuberosa
Lathyrus odoratus (Sweet pea)

Flowers eight months in the year on the pergola or veranda. All these vines do well in the sun. If the pergola is running north or south, as it should be, they can be planted on either side; but if the pergola runs east and west, plant on the north side only the vines previously recommended for a shady veranda:

March — *Jasminum nudiflorum*
April — *Forsythia suspensa*
May — *Wistaria Chinensis, Akebia quinata*
June — Climbing roses, *Actinidia arguta, Hydrangea petiolaris*
July — *Tecoma grandiflora, Actinidia polygama,* annuals
August — *Clematis paniculata,* climbing roses, annuals
September — *Lonicera Halliana, Clematis paniculata,* annuals
October — *Clematis flammula,* annuals

Vines especially adapted for hanging baskets:

Tropæolum peregrinum
Thunbergia alata
Euonymus radicans, (foliage,)
Hedera Helix
Maurandia scandens
Eccremocarpus scaber
Asparagus Sprengeri

Tallest growing vines; all over one hundred feet but the last, which runs over seventy-five.

Ampelopsis tricuspidata
Hedera Helix
Actinidia arguta
Wistaria Chinensis
Vitis Labrusca

Vines grown for their edible fruit:

Cucumber
Melon
Squash
Pumpkin
Tomato
Sweet potato
Pea
Lima bean
Scarlet runner
Grape

Vines grown for their curious fruit:

Dioscorea bulbifera
Ecballium Elaterium
Abrus precatorius
Monstera deliciosa
Cardiospermum Halicacabum

Vines for their ornamental fruit :

Ampelopsis quinquefolia (varieties)
Celastrus scandens
Gourds
Momordica Charantia
Lycium Chinensis
Humulus lupulus

Vines that make good specimens for a lawn:

Wistaria brachybotrys
Tecoma radicans var. *speciosa*
Lonicera Heckrotti
Clematis (large-flowered)
Climbing roses

Best vines for standing the hot, dry air of a dwelling-house:

Hoya carnosa
Hoya globosa
Asparagus Medeoloides
Hedera Helix
Jasminum officinale
Asparagus plumosus

Vines that look well covering dead shrubs:

Adlumia cirrhosa
Coccinea cordifolia
Eccremocarpus scaber
Clematis paniculata
Lonicera reticulata var. *aurea*
Lathyrus latifolius (Perennial pea)

Best vines for covering dead trees:

Ampelopsis quinquefolia
Wistaria Chinensis
Tecoma grandiflora
Actinidia arguta
Vitis Labrusca
Ampelopsis heterophylla

Vines for covering telephone poles and such tall, thin objects:

Ampelopsis (all varieties)
Hedera Helix

For covering the trunks of trees, vines that will confine themselves to the trunk are:

Lonicera Japonica (all varieties)
Euonymus radicans

Selected List of Climbing Roses

Name	Race	Name of Introducer	Year of Introduction	Colour
Arcadia	HW	Walsh	1907	scarlet
Ards Rover	HR	Dickson	1898	red
Babette	HW	Walsh	1905	rose
Baltimore Belle	Set	Feast	1843	yellowish white
Banksia (two)	Bks	Keer, Damper	1807, 1827	white, yellow
Bouquet d'Or	N	Ducher	1827	yellow
Carmine Pillar		G. Paul	1896	crimson
Climbing La France	HT	Henderson	1894	pale pink
Climbing Perle des Jardins	T	Henderson	1891	light yellow
Crimson Rambler	R	Turner	1894	bright crimson
Dawson	R	Dawson	1900	light pink
Débutante	HW	Walsh	1901	cherry pink
Devoniensis	T	Foster	1838	creamy white (requires protection)
Dorothy Perkins	HW	Perkins	1902	bright pink
Duchess d'Auerstaedt	T	Bernaix	1887	yellow
Dundee Rambler	Arv	Martin		white
Empress of China	Be	Jackson	1896	light red
Euphrosine	Mtf	Schmitt	1895	pink
Evangeline	HW	Walsh	1907	white
Evergreen Gem	HW	Manda	1899	pale buff
Farquhar	HW	Dawson	1903	cherry

Selected List of Climbing Roses—*Continued*

Name	Race	Name of Introducer	Year of Introduction	Colour
Gardenia	HT	Scupert	1899	white
Gem of the prairies	Set	Burgess	1876	red, white
Gloire de Dijon	T	Jacotot	1853	creamy white, pink centre
Helene	Pr	Miellez		deep red
Hiawatha	HW	Walsh	1904	crimson
Jersey Beauty	HW	Manda	1899	white
Lady Gay	HW	Walsh	1903	light pink
Lucille	HW	Walsh	1910	light pink
Madame Berard	T	Levet	1872	salmon pink
Manda's Triumph	HW	Manda	1897	pink
Marechal Niel	T	Pradel	1864	rich yellow
May Queen	HW	Dr. Van Fleet	1897	clear pink
Memorial Rose	W	Int. from Japan	1893	white
Minnehaha	HN	Walsh	1904	dark pink
Pearl Queen	HW	Dr. Van Fleet	1897	white, blush centre
Pink Roamer	HW	Manda	1898	light pink
Prairie Queen	Set			pink
Psyche	Mtf	G. Paul	1899	pink
Queen Alexandra	Mtf	Veitch	1901	red, very free
Queen of the prairies	Set	Feast	1843	crimson
Reine Marie Henriette	T	Levet	1878	cerise

Selected List of Climbing Roses *Continued*

Name	Race	Name of Introducer	Year of Introduction	Colour
Reine Olga	T	Nabonnand	1885	red
Reve d'Or	N	Ducher	1869	deep yellow
Ruby Queen	HW	Dr. Van Fleet	1897	red, white centre
Seven sisters	Mtf			rose
Sweetheart	HR	Walsh	1901	delicate pink
Trier	HMtf	P. Lambert	1904	pale rose, fading white
Universal Favourite	HW	Manda	1899	pink
Waltham Rambler	Mtf	W. Paul	1903	deep pink, yellow centre
Wedding Belle	Rambler Hybrid	Walsh	1905	pink and white
White Rambler	Mtf	Corbœuf	1895	white
T. A. Richardson	N	Ducher	1878	salmon pink
Yellow Rambler	Mtf	Schmidt	1895	yellow

Race Abbreviations

HR — Hybrid Ramontant
D — Damask
Set — Setigera
Bks — Banksia
Arv — Arvensis
Pr — Provence
Mtf — Multiflora
N — Noisette
HT — Hybrid Tea
T — Tea
HW — Wichuraiana Hybrid
Be — Bengal
HN — Hybrid Noisette
HP — Hybrid "Perpetual" (once flowering)
W — Winchuraiana

PLANTING TABLE FOR VINES

Planting Table for Vines

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Abrus precatorius	Crab's-eye vine	12	Greenhouse	Summer	Rose and White	Needs help	Early spring	Used in ancient times for foretelling the weather
Actinidia arguta		30	Hardy shrub	June	White	Twining	Early spring	Greenish-yellow fruit edible
Actinidia polygama		20	Hardy shrub	July	White	Twining	Early spring	Yellow fruit. Attracts cats and must be protected from them
Adlumia cirrhosa	Allegheny vine	10	Hardy biennial	All summer	White	Leaf stalks	Requires none	Delicate, attractive little vine Flowers first season
Akebia quinata		25	Hardy shrub	May	Purple and brown	Twining	After flowering	Very desirable. In Japan the fruit is eaten
Akebia lobata		20	Hardy shrub	May–June	Purple and brown	Twining	After flowering	Not very dense but handsome
Allamanda Schottii	Climbing allamanda	12	Greenhouse	All summer	Yellow	Twining needs help	Spring, before starting	Flowers will keep better if cut at night and immediately plunged in cold water
Allamanda Hendersoni		20	Greenhouse	All summer	Yellow	Twining needs help	Spring, before starting	Flowers will keep better if cut at night and immediately plunged in cold wa er

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Ampelopsis quinquefolia	Virginia creeper	50	Hardy shrub	(Foliage vine)		Tendrils and discs	Early spring	Dozens of varieties. Brilliant in fall
Ampelopsis tricuspidata	Boston ivy	100	Hardy shrub	(Foliage vine)		Tendrils and discs	Early spring	Good vine in large cities
Ampelopsis meterophylla		20	Hardy shrub	(Foliage vine)		Tendrils and discs	Early spring	Many bright blue berries in fall
Antigonon leptopus	Mountain rose	10	Greenhouse	Summer	Rose pink	Tendrils	Early spring	Good vine for the South where it is hardy
Apios tuberosa	Groundnut	8	Will not stand frost	July–Aug.	Brown	Twining		Tubers should be lifted in fall
Aristolochia macrophylla	Dutchman's pipe	40	Hardy shrub	(Foliage vine)	Purple and white	Twining, needs help	Early spring	Very large, handsome leaves
Aristolochia grandiflora	Pelican-flower	12	Greenhouse	Summer	Purple, mixed	Twining needs help	Early spring	Good for the conservatory Immense blossoms
Aristolochia grandiflora var. *Sturtevantii*		12	Greenhouse	Summer	Purple, mixed	Twining needs help	Early spring	An improvement on the preceding
Aristolochia elegans		10	Greenhouse	Summer	Purple and white	Twining needs help	Early spring	Small-flowered, graceful greenhouse form.

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Asparagus medeoloides	Smilax	20	Green-house	(Foliage plant)		Twining	Early spring	Grown in great quantity for winter greenery
Asparagus Sprengeri		1½	Green-house	(Foliage plant)		Weakling, pendant		Fine pot plant
Asparagus plumosus, also var. *nanus*		20	Green-house	(Foliage plant)		Twining		The asparagus-fern handled by florists
Asparagus crispus		6	Green-house	(Foliage plant)		Twining		Large brown berries and many long tubers
Berchemia scandens	Supple Jack	15	Half-hardy shrub	June	Greenish-white	Twining	After flowering	Blue-black berries. Useful over trellises in any soil
Berchemia racemosa		15	Half-hardy shrub	July	Greenish-white	Twining	Early spring	Hardier than preceding, with red berries but not so high-climbing
Bignonia capreolata	Trumpet-flower, Cross-vine	50	Green-house	Summer	Yellow and red	Tendrils	Early spring	Handsome outdoors and in. All species need plenty of space
Bignonia capreolata var. *atrosanguinea*		50	Green-house	Summer	Purple	Tendrils	Early spring	Leaves longer and narrower

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Bignonia venusta		15	Green-house	Late fall and winter	Orange	Tendrils	Early spring	Profuse bloomer in warm house. Fine rafter plant
Bougainvillæ glabra	Chinese paper-plant	15	Green-house	Summer	Flowers yellow, bracts purple	Twining, needs help	Early spring	The most showy flower of its colour
Bougainvillæ glabra var. *Sanderiana*		20	Green-house	Summer	Flowers yellow, bracts purple	Twining, needs help	Early spring	Blooms even in very small pots. Deeper coloured
Boussingaultia baselloides	Madeira vine	20	Tender, tuberous rooted	Summer–frost	White	Twining	Early spring	Tubers should be lifted in fall
Bryonopsis laciniosa		8	Annual	All summer	Yellow	Tendrils	Early spring	Attractive green and yellow fruit
Bryonopsis laciniosa var. *erythrocarpa*		8	Annual	All summer	Yellow	Tendrils	Early spring	Fruit red, with white markings. Needs a warm house
Cardiospermum Halicacabum	Balloon vine	10	Annual	Summer	White	Tendrils	Early spring	Small balloon-shaped pods

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Dioscorea divaricata	Cinnamon vine	8	Tuberous rooted	(Foliage vine)		Twining		"Yams" are eaten in tropics Will live in ground over winter
Dioscorea villosa		15	Hardy perennial	Summer	Greenish-white	Twining		Common in thickets. Also sold as hardy border plant
Dolichos Lablab	Hyacinth bean	20	Annual	Summer	Purple	Twining		Easily grown in common soil, but will not stand frost
Ecballium Elaterium	Squirting cucumber	6	Annual			Tendrils		Grown for its curious explosive fruit
Eccremocarpus scaber		10	Annual	July–Aug.	White	Twining		Perennial in the South
Escallonia Montevidensis		8	Tender shrub	May–June	White	Twining, needs help	Spring, lightly	Good vine, but requires lots of winter care north of Washington
Euonymus radicans	Spindle-vine	20	Hardy shrub	(Foliage vine)		Rootlets	Spring, lightly	Numerous varieties described in Chapter XII
Epigæa repens	Trailing arbutus	½	Hardy creeper	May–June	White and rose	Trailer	Requires none	A good ground cover in shady spots
Ficus pumila	Creeping fig	15	Green-house	(Foliage vine)		Rootlets	Spring, lightly	Good vine for brick walls in the greenhouse

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Ficus pumila var. *minima*		15	Green-house	(Foliage vine)		Rootlets	Spring, lightly	With smaller leaves
Forsythia suspensa	Golden bell	15	Hardy shrub	April–May	Yellow	Requires help	After flowering	Excellent plant for spring flowers
Forsythia suspensa var. *Fortunei*		15	Hardy shrub	April–May	Yellow	Requires helpers	After flowering	More vigorous grower
Gelsemiun sempervirens	Carolina yellow jessamine	15	Tender shrub	April–May	Yellow	Twining	After flowering	In South rapid grower on any soil. Roots have medicinal properties
Hedera Helix	English ivy	100	Hardy shrub	(Foliage vine)		Rootlets	Spring, lightly	Numerous varieties described in Chapter XII
Hoya carnosa	Wax plant	20	Green-house	Summer	White	Twining	Spring, lightly	An excellent house plant. Improves with age
Hoya globulosa		15	Green-house	Summer	Straw-colour	Twining	Spring, lightly	Very handsome. Rest in a cool place over winter, like preceding
Hoya imperialis		30	Green-house	Summer	Purple	Twining	Spring, lightly	Large form requiring very rich soil and fairly high temperature

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Humulus Lupulus	Hop vine	15	Hardy perennial	July–Aug.	Straw-yellow	Twining		Yellow hops are attractive as well as foliage and flowers
Humulus Japonicus		20	Annual	July-Aug.	Yellowish white	Twining		Very good variegated form
Ipomœa Quamoclit	Cypress vine	20	Annual	July–frost	Scarlet	Twining		Has numerous hybrid varieties, all of which are very good
Ipomœa purpurea	Tall morning-glory	10	Annual	July–frost	All colours	Twining		Very popular. Seeds ripen and may be sowed the next season
Ipomœa Bona-nox	Moon-flower	20	Annual	July–frost	White	Twining		Does well in garden or over piazza. Fine cut-flowers for evening decoration
Ipomœa Batatas	Sweet-potato	½	Tender, tuberous-rooted			Twining		Grown as a commercial crop mainly in the South
Jasminum Sambac	Arabian jasmine	18	Green-house	All year	White	Twining, needs help	Early spring	All species of easy culture This is a perpetual bloomer

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Jasminum humile	Italian jasmine	20	Tender shrub	Summer–cold weather	Yellow	Twining, needs help	Early spring	Large in South. Indoors a pot-plant. The commonest form
Jasminum officinale	Sweet-scented jessamine	15	Tender shrub	Summer	White	Twining, needs help	Early spring	Stands winter in Philadelphia, if protected
Jasminum nudiflorum	Hardy jasmine	20	Hardy shrub	March-April	Yellow	Twining, needs help	Early spring	Strong grower, needs support With protection, hardy in New York
Lapageria rosea	Chilian bellflower	20	Green-house	Summer	Rose	Twining	Early spring	Also a white variety. Requires plenty of water when in growth
Lathyrus odoratus	Sweet pea	6–8	Annual	June–frost	Nearly all colours and shades	Tendrils	Early spring	Magnificent both outdoors, and forced. In garden give good soil and plant early
Lathyrus latifolius	Everlasting pea	6–8	Hardy perennial	June-frost	Rose	Tendrils	Early spring	A rampant grower, hardy, easily grown anywhere in several varieties
Lonicera japonica	Honeysuckle	20	Hardy shrub	June–Aug.	White and yellow	Twining	Early spring	Dozens of hybrid varieties of this species

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Lonicera Periclymenum	Woodbine	4	Hardy shrub	June–Sept.	White and yellow	Twining	Early spring	Also has many hybrid varieties that flower all summer
Lonicera sempervirens	Trumpet honeysuckle	25	Hardy shrub	May–Sept.	Orange-scarlet	Twining	Early spring	Evergreen southward. Blooms May to September
Lycium Chinense	Matrimony vine	30	Hardy shrub	June	Purple	Twining, needs help	Early spring	Grown principally for its very ornamental fruit
Lycium Chilense		20	Hardy shrub	July	Purple	Twining, needs help	Early spring	Foliage appears frosted Fruit orange-red
Maurandia scandens		6	Tender annual	All summer	Varied	Leaf stalks	Early spring	Grown as a shrub in the South
Menispermum Canadense	Common moonseed	12	Hardy shrub	June–July	Greenish-white	Twining	Early spring	Hardy even in Ontario Blue-black fruit
Mitchella repens	Partridge berry	½	Hardy perennial	(Foliage vine)				Fine ground-cover in shady places
Momordica Charantia	Balsam pear	10	Annual	All summer	Yellow	Tendrils		Grown for its ornamental fruit eaten by Chinese

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Momordica Balsamina	Balsam apple	6	Annual	All summer	Yellow	Tendrils		Flowers are small and inconspicuous on these two species
Monstera deliciosa	Ceriman	12	Greenhouse	(Foliage vine)		Rootlets	Requires none	Very curious fruit, leaves, and habit
Passiflora incarnata	Passion-flower	12	Tender perennial	Summer	White and purple	Tendrils		Ornamental fruit. Has interesting legendary associations
Passiflora quadrangularis	Granadilla	15	Greenhouse	Summer	White and red	Tendrils	Spring, lightly	Edible fruit if hand-pollinated. Important vine in tropics
Periploca Græca	Silk vine	40	Hardy shrub	July–Aug.	Purple	Twining	Spring	North of New York needs winter protection. Flowers fragrant
Phaseolus Caracalla	Corkscrew flower	20	Tender perennial	Summer	Purple	Twining		Becomes a nuisance in California. In North, grown indoors or outside during summer
Phaseolus multiflorus	Scarlet runner bean	10	Annual	Summer	Scarlet	Twining		Perennial in the South. Excellent quick grower for arbours and windows

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Phaseolus lunatus, var. *macrocarpus*	Lima bean	12	Annual			Twining		A vegetable grown for its edible fruit
Philodendron verrucosum		10	Green-house	(Foliage vine)		Rootlets, needs help	Requires very little	South American plant. Roots along stem need care
Piper nigrum	Pepper	20	Climbing shrub	Summer	Greenish	Rootlets		Largely grown in the South for its fruit, commercial black pepper
Piper Futokadsura	Japanese pepper	15	Tender shrub	Summer	Greenish white	Rootlets		Red-fruited, handsome. Stands considerable frost
Plumbago Capensis	Leadwort	10	Green-house	All summer	Blue	Twining, needs help	Early spring	Old plants bloom outdoors from spring to frost
Polygonum Baldschuanicum	Knotweed	20	Hardy perennial	Summer	Rose	Twining needs help		Rare in America. Very vigorous and decorative
Pothos aureus		10	Green-house	(Foliage vine)		Rootlets	Requires very little	In dark, handsome leaf-colourings disappear. Branches will live for a time in water

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Pueraria Thunbergiana	Kudzu vine	60	Hardy perennial	(Foliage vine)		Twining, needs help	Spring, if any	Woody vine in South. In North roots perennial, extensive herbaceous growth each year
Rhodochiton volubile	Purple bells	8	Tender annual	Summer	Red	Needs help		Perennial in the South Blooms the first season from seed.
Rosa multiflora	Crimson Rambler	20	Hardy shrub	June–July	Red	Needs help	Early spring	There is but one variety of each species of rose given, although there are hundreds of varieties of each
Rosa setigera	Prairie rose	6	Hardy shrub	June–July	Rose	Needs help	Early spring	
Rosa Wichuraiana	Memorial rose	12	Hardy shrub	July–Sept.	White	Needs help	Early spring	Splendid for covering banks and rockeries
Rosa Banksiæ	Banksia rose	20	Hardy shrub	May–June	Yellow	Needs help	Early spring	Will reach 20 feet in height
Schizophragma hydrangeoides	Climbing hydrangea	30	Hardy shrub	July	White	Rootlets	Early spring	Good for covering tree trunks and for cut-flowers. Prefers shady spot

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flower	Habit of Climbing	When to Prune	Remarks
Solanum jasminoides	Potato vine	20	Green-house	Summer	White and blue	Needs help	Early spring	Useful deciduous form for coolhouse and conservatory. Hardy in South
Solanum Wendlandii		50	Green-house	Summer	Lilac and blue	Needs help	Early spring	The most showy of the genus; almost hardy
Stephanotis floribunda		15	Green-house	Early spring	White	Twining	Very little	Blooms spring and summer Rest in winter and feed annually. Flowers very fragrant
Tacsonia Van Volxemii		10	Green-house	Summer	Red	Tendrils	Early spring	The best known species and handsome, but several others are good
Tecoma radicans	Trumpet vine	30	Hardy shrub	July–Sept.	Orange-red	Rootlets	Early spring	Var. *atropurpurea* has deeper coloured flowers
Tecoma grandiflora	Chinese trumpet-creeper	30	Hardy shrub	Aug.–Sept.	Orange-red	Rootlets	Early spring	Flowers larger and open better than in *T. radicans*

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Thunbergia alata		4	Tender annual	All summer	Mixed	Twining		Perennial vine, but treated as an annual in the North and in greenhouses
Thunbergia grandiflora		10	Green-house	Late summer	Blue and white	Twining	Early spring	Very large, perennial. Flowers in summer and fall
Tropæolum peregrinum	Canary-bird flower	15	Annual	All summer	Yellow	Twining		Quick-growing, attractive vine but rather small flowers
Tropæolum majus	Nastur-tium	10	Annual	All summer	Mixed	Twining		Both climbing and dwarf forms; useful in countless places
Vanilla planifolia	Vanilla	15	Tropical	Winter	Yellow	Rootlets		Cultivated South for its fruit which produces the vanilla of commerce
Vinca minor	Periwinkle	½	Hardy trailer	Spring and early summer	Blue	Creeper		Fine creeper for shady spots Blue flowers contrast prettily with foliage
Vitis Labrusca	Fox grape	100	Hardy shrub	Spring	Colourless	Tendrils	Early spring	Fruit very attractive in fall The ancestral species of many native American varieties

Planting Table for Vines—*Continued*

Botanical Name	Common Name	Height Ft.	Kind of Plant	Time of Flowering	Colour of Flowers	Habit of Climbing	When to Prune	Remarks
Vitis vinifera	Wine grape	50	Tender shrub	Spring	Colourless	Tendrils	Early spring	All greenhouse grapes are varieties of this species
Wistaria Chinensis	Chinese wistaria	100	Hardy shrub	May	White and blue	Twining	After flowering	One of the best flowering vines we have. Numerous varieties are described in Chapters X, XI, and XVI.
Wistaria multijuga	Japanese wistaria	100	Hardy shrub	May–June	White and blue	Twining	After flowering	
Wistaria speciosa	American wistaria	35	Hardy shrub	July	White and blue	Twining	After flowering	

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